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ABSTRACT

The report contains 15 papers given at a 1979 Australian conference on prevention and intervention with young children at risk of developmental and learning difficulties. Papers have the following titles and authors: "Prevention and Early Amelioration of Developmental and Learning Disabilities: Progress, Problems and Prospects" (W. Apelt, J. Atkinson); "Prevention and Intervention: An Educational Pespective" (H. McGrady); "Prevention and Intervention: A Medical Perspective" (W. McBride); "Prevention and Intervention: A Social-Psychological Perspective" (B. Watts); "Intervention for the Severely and Profoundly Handicapped" (R. Andrews); "The Parents' Role in the Development of Language" (C. Isbister); "Parents as Continuing Support in Special Education" (G. Ashby); "The Chance and Quality of Survival of Low Birth Weight Infants (LBW)" (D. Tudehope); "The Development of High Risk and Pre-Term Infants" (Y. Burns); "Non-Cognitive Factors in Children's Learning" (L. Gow, J. Ward); "Unwillingly to School--Motivational/Emotional Factors as an Impedance to Classroom Learning in Young Children" (H. Connell); "An Australian Developmental Screening Record: The Developmental Record for Infants and Young Children (DRIYC)" (B. Burdon); "Training Parents as Remedial Reading Tutors" (T. Glynn, et al.); "Learn to Play--Play to Learn" (J. Calder); and "Evaluation and Assessment of Communication Disorders" (N. Slorach). Also provided are a list of contributors, a listing of the conference workshops, and a list of the working parties. Appended is a description of the focus and content of conference workshops. (DB)

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TOO LATE AT EIGHT

PREVENTION AND INTERVENTION

YOUNG CHILDREN'S LEARNING DIFFICULTIES

Edited by

Joan K. Atkinson

It is simply never too early to intervene, and .... from the data base we now have, it seems clear that urgently needed interventions should occur long before a child is born. Once a child has arrived, the work necessarily shifts to amelioration, away from prevention - always a second choice for intervention .....Beginning at birth is not too soon.

(Hayden and Pious, 1979)

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FOREWORD

In the International Year of the Child it seemed appropriate that the theme for the Schonell Educational Research Centre's Ninth Annual Seminar should be prevention and intervention with young children at risk of developmental and learning difficulties. If the early years of life are critical for all of us then they are even more critical for the handicapped child. By identifying handicaps and potential problems as early as possible in a child's life we can intervene to lessen or even prevent them.

The success of efforts to prevent handicapping conditions and to identify and intervene as early as possible where they already exist, requires the experience and cooperation of a wide range of specialists from different fields - medicine, education, psychology, the therapies and others. Our National Conference/Workshop *"Too Late at Eight"* attracted professionals from across these disciplines who presented papers on many aspects of prevention and intervention.

But of all the people needed to make prevention and intervention really work, parents are probably the most important. Given information and guidance they are the ones who can prevent risks and causes of handicap before and after birth. With assistance they can play vital roles in the planning and implementation of ameliorative programs within both the home and the school. With the intention of providing such assistance, one full day of the Conference was devoted to papers, workshops and discussions of specific interest to parents. It was gratifying that a number of parents and parent groups were able to attend on that day not only to listen and learn but to contribute in workshops and discussions.

During the Conference Dr. Harold McGrady presented the Fred J. Schonell Memorial Lecture for 1979.

"Too Late at Eight" was not only an appropriate title for this Conference at a time where only prevention-cum-intervention programs were being increasingly recognised. It proved to be a theme capable of drawing together those professions with a substantial contribution to make towards a realistic implementation of such programs.

This Conference made all who attended it aware of the fact that the time to do something is *NOW*.

His Excellency Sir James Ramsay K.C.M.G., C.B.E., D.S.C. Governor of Queensland opened the Conference with an excellent address, sensitively aware of the needs of young children with special educational problems. Throughout the Conference, extensive and mutually enriching interchanges between professionals and parents were a particular - and planned - feature of the program. A rewarding culmination of the Conference occurred in the closing session - a panel discussion with Professor Betty Watts as Chairperson. Panel members clearly thought that the Conference had brought forward very positive feelings about educational needs - those being partially met and those, as yet, not met at all.

For all of us - parents, professionals and children - the essential message of the Ninth Annual Conference is that we do "care for kids"; and that a more effective pooling of our knowledge of their development will enhance the quality of our care.

Not all the papers presented at this Conference are included in this publication. Space does not permit the inclusion of more than a selection of the forty papers given.

The presentation of these proceedings was contributed to in no small way by Wendy Barrie who undertook the typing of the manuscript in its final form.

Joan K. Atkinson.

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PREVENTION AND EARLY AMELIORATION OF DEVELOPMENTAL AND LEARNING DISABILITIES : PROGRESS, PROBLEMS AND PROSPECTS

W.C. Apelt *J.K. Atkinson*

Introduction

The children who are born this year, 1979, the International Year of the Child, will reach maturity in the year 2000. Symbolically these children represent the first adult generation of the next century. On them and their contemporaries will devolve much of the responsibility for the future wellbeing and progress of society.

It is appropriate that we should attempt to review, in this year, the current status of efforts to prevent or ameliorate those adverse genetic, biological and environmental influences which compromise the *developmental* integrity of a substantial proportion of the world's children.

It is paradoxical that the technology which has made significant contributions to human welfare and the improvement in living standards has also created environmental hazards which have been implicated in the increased incidence of birth defects and other types of child morbidity. At the present time in the United States, concern is being expressed about the possible detrimental effects of the legal and illegal disposal of noxious chemical wastes including dioxin, one of the most toxic substances created by man. The dangers of irradiation are now well recognised and the diagnostic and therapeutic use of this procedure, especially for pregnant women, is being carefully monitored. However, the recent exposure of a large population, including pregnant women and very young babies, to variable increases in radiation as a result of the nuclear accident at Harrisburg illustrates the often unpredictable hazards to which modern society is exposed and which heighten the possibility of increases in the incidence of handicap. It has been suggested, for instance, that the higher rates of age specific incidence of Down's syndrome recorded in Sweden in recent years may be a real effect, and not solely due to improved ascertainment. The increase may reflect new hazards, including pre-conceptual radiation both inside and outside the medical services.

On a more optimistic note, reviews of progress in prevention (Begab, 1975; Clarke & Clarke, 1977) have identified a number of developments in society and in general health care which have exerted a considerable impact on prevention without being specifically directed towards this objective. The widespread use of polyvalent vaccines to immunize children against the common contagious diseases of childhood which may have neurological sequelae represents a significant advance. Unfortunately, where immunization is not a requirement for school entry, the publicity given to the small number of cases of post-immunization encephalopathy has deterred some parents from taking advantage of the available services.

Greater appreciation of the detrimental effects of pollutants of various kinds has resulted in more rigorous environmental surveillance and stricter controls. Improved access to health care including maternal health services for more of the disadvantaged groups in society has been achieved in many countries. The looming crisis in the cost of medical services, however, represents a threat to expansion of provisions in this field. The societal pattern of earlier completion of child-bearing should decrease the number of at risk pregnancies in older women. This effect could be offset by the current escalation in teenage pregnancies, or 'premature parenthood'. According to Zigler (1978), many of the factors associated with mental retardation and physical ill-health are found in teenage pregnancies and child-rearing. These factors include sub-optimal reproductive age, inadequate pre-natal and neonatal health care, maternal and infant malnutrition and premature and low birth weight babies.

A Model of Preventive Action

Examination of the literature on prevention of developmental disabilities discloses the *complex* and *multi-faceted nature* of the activities subsumed under the term prevention (Wald, 1975). The classical model of preventive action includes three different types of activities which have been designated as primary, secondary and tertiary prevention.

Types of Preventive Action

1. Primary - preventing development of diseases by removal of the *causative factor* or *changing resistance* of the organism, e.g. Development of the rubella vaccine and its administration to girls prior to conception, to avoid the potentially damaging sequelae of rubella infection during pregnancy.

2. Secondary - preventing *development of symptoms* in an organism affected by the pathological process, e.g. Dietary control to restrict phenylalanine to avoid brain damage and mental retardation in children born with phenylketonuria.

3. Tertiary - prompt, effective treatment leading to either disappearance of alleviation of symptoms and *preventing or ameliorating long-lasting handicap*, e.g. The prevention of cultural-familial mental retardation by the institution of a comprehensive program of family rehabilitation, including intensive early intervention for children at risk because of severe psycho-social disadvantage.

(Heber & Garber, 1975)

While primary and secondary prevention are, to a large extent, the province of the biomedical sciences, tertiary prevention includes treatment and rehabilitation of the developmentally disabled, enlisting the co-operation of the behavioural sciences.

Stages of Prevention

Preconceptual Stage

The application of recent and continuing technological advances in the biomedical sciences has expanded opportunities for the prevention of genetic disease, which makes a disproportionate contribution to the severer grades of mental retardation (Milunsky, 1975). More specifically, the development of techniques for the identification of healthy individuals who are carriers for specific deleterious genes represents an important new dimension in the potential control of metabolic disorders, both autosomal, recessive and X-linked.

Tay-Sachs disease, of which one in thirty Ashkenazi Jews is a carrier, is the first recessive condition for which a prospective approach to prevention has been applied. In 1971 a voluntary community-based adult genetic screening program was initiated in Baltimore, U.S.A. (Kaback, 1975). Since this approach leads to the identification of couples at risk prior to the occurrence of an index case, it creates the possibility for both successful reproduction and effective disease prevention, by the therapeutic abortion of foetuses diagnosed as having the disease. Compensatory reproduction, however, could result in an increase in the number of healthy offspring bearing the defective gene.

Some of the dilemmas which inhere in this new preventive approach have been identified by Sells and Bennett (1977):

> *"Voluntary screening of a healthy adult population to identify individuals who carry deleterious genes is a new concept in health care and raises many complex questions ... some feel that insufficient inquiry has been made into the psychological consequences of knowing that one is a carrier. Whether or not the prevention of the birth of a child with Tay-Sachs disease merits such possible risks is an ongoing debate."* (p.118)

The possibilities for genetic surveillance associated with heterozygote screening raise issues concerning voluntarism, confidentiality and right of access to genetic information. The necessity for both public education programs and the availability of genetic counselling services to ensure understanding of the implications of carrier status is obvious. No screening program should be undertaken without these essential components.

Pre-natal diagnosis

In the last decade, dramatic advances have been made in pre-natal diagnosis and the scope of genetic counselling with the development of amniocentesis and the culture of amniotic fluid cells, pioneered by Steele and Breg in 1966. This technique permits intra-uterine diagnosis of certain genetic diseases, chromosomal disorders and congenital malformations such as anencephaly and open neural tube defects. In addition to direct study of the amniotic fluid and cell

culture for biochemical enzyme assay or karyotype determination, amniography, ultrasound scan, amnioscopy, placental aspiration and maternal blood screening comprise techniques now available for pre-natal diagnosis (ACOG Technical Bulletin, 1976).

In most instances studies will allay the anxiety of a woman at risk for bearing a genetically or physiologically anomalous child. Positive diagnosis may lead to pregnancy termination, if this option is acceptable to the woman and her family. Only in an extremely limited number of cases is treatment of the mother by dietary modification or drug therapy appropriate. Because of the nature of the reproductive decisions which may be required by pre-natal diagnosis, the need for accuracy is vital. Problems such as failure of cell culture, contamination and unusual karyotypes all pose diagnostic dilemmas.

Currently there are severe limitations to the diagnostic contribution of amniocentesis in both X-linked and hereditary metabolic disorders. Few of the former conditions, carried by females and transmitted to 50 percent of their male offspring, are specifically diagnosable pre-natally, so that determination of a male foetus is the only available option. While it has been estimated that selective abortion of male foetuses in at risk pregnancies would reduce the incidence of these disorders by two-thirds, this choice would also result in the abortion of healthy males and a possible increase in the number of female carriers.

Many of the metabolic disorders are now potentially diagnosable pre-natally by enzyme analysis. However there are constraints on the number of assays which can be performed on a single amniotic fluid sample. As a result, the only current option is prevention of the birth of a second child in a family with the same condition as an index case. New micro-analysis techniques may in the future create the possibility of a 'biochemical enzymatic profile'.

Assay for elevated levels of alpha-feto-protein in amniotic fluid, though a non-specific diagnostic tool, allows for pre-natal detection of approximately 90 percent of open neural tube defects, including anencephaly and spina bifida. More recently the possibility of routine screening of all pregnancies for these congenital malformations has been indicated by the discovery that maternal serum alpha-feto-protein is elevated when the foetus is affected. If the efficacy of AFP serum screening can be demonstrated, the way seems open to prevention of initial cases of neural tube defects.

Other pre-natal influences

Factors such as maternal infections, chronic alcoholism, drug use and abuse and irradiation have all been implicated in the aetiology of birth defects, mental retardation and/or related developmental disabilities. The association between some of these agents and adverse effects on the developing foetus has been substantiated by considerable research; in other cases convincing epidemiological evidence of association with congenital malformations has yet to be provided.

Since the foetal alcohol syndrome was first outlined (Jones, Smith, Ulleland & Streissguth, 1973), an impressive body of research evidence has been amassed documenting the relationship between chronic maternal alcoholism and mental deficiency, growth retardation, microcephaly and other major craniofacial anomalies. Preventive alternatives appear to be limitation of alcohol intake during pregnancy or early termination. It has also been suggested that prescribed drugs such as anti-convulsants and anti-coagulants may be teratogenic. The implications for better monitoring of drug use and more stringent critera for drug management during pregnancy are clear. Similarly, a more judicious use of the X-ray is indicated not only during pregnancy but throughout the whole child-bearing period.

It needs to be stressed that developments in pre-natal diagnosis cannot be considered in isolation from the complex legal, ethical and religious issues which surround these techniques. It has been suggested, for instance, that these considerations may be responsible for under-utilization of amniocentesis in high risk pregnancies.

The successful treatment of phenylketonuria, one of the inborn errors of amino-acid metabolism, following identification of affected individuals in new-born screening programs has been responsible for creating a potential new source of retardation. Treated girls, now approaching child-bearing age and mentally normal, are at high risk for producing mentally retarded children, even though the children do not have PKU. Researchers have suggested the possibility of preventing mental retardation in non-phenylketonuric children of PKU mothers by dietary treatment during pregnancy (MacCready & Levy, 1972).

Neo-natal stage

Two of the most influential procedures oriented towards prevention of developmental disabilities in the peri and neo-natal period are new-born screening and the intensive care of conditions associated with prematurity, low birth weight and peri-natal anoxia.

New-born screening

Programs of new-born screening for phenylketonuria have been extensively documented, as have associated intervention programs of dietary control to prevent the mental retardation and brain damage which characterise this disorder when untreated.

Heterogeneity of this condition still poses some diagnostic problems. For instance, in one survey conducted in the U.S.A. (Holtzman, Meek & Mellits, 1974) there are 18 false positives, mostly transient elevations for every diagnosis of classical PKU. In addition it was found that female new-borns with PKU, in whom the rate of rise in blood phenylalanine is slower than in males, were at risk, for missed diagnosis if screening occurred before 4 days of age. This risk may be increased by recent trends such as earlier discharge from maternity hospitals and a preference for home confinements.

A significant advance in screening the newborn is the recent capability to detect congenital hypothyroidism, which has a higher incidence in the general population than PKU. Effective treatment in the form of thyroid hormone replacement therapy is available.

Intensive Care of At Risk Neonates

Considerable controversy exists as to which obstetric conditions are hazardous (Parmalee & Haber, 1973) and to what extent (Sameroff & Chandler, 1975). Complications of pregnancy and birth not only threaten survival of the new-born but may also increase the statistical risk for a variety of handicapping conditions, ranging from cerebral palsy, intellectual sensory and attentional deficits to reading disabilities" (Beckwith, 1976, p.120).

More sophisticated technology including mechanical ventilation and improvements in medical and nursing management procedures are transforming intensive care of newborn infants at high risk, such as premature and small for dates babies. As a result many children who would have faced life burdened with neurological impairments, including cerebral palsy, are now leading normal or near-normal lives. Others who would have suffered severe handicap now exhibit milder developmental anomalies (Fitzhardinge, 1975). These advances however are not without their own tragic legacy. Children in particular very low birth weight babies, who previously would have succumbed now survive, with the sequelae of primary insults exacerbated by iatrogenic diseases such as retrolental fibroplasia, gross respiratory inadequacy; or auditory impairment.

Impressive research by Klaus and Kennell (1970) has demonstrated that involving parents in care giving procedures for ill or at risk premature infants leads to an increase in attachment behaviours, offsetting the risk of failure in the mother-child bonding relationship, which is one of the potentially deleterious consequences of intensive care.

However extensive reviews of the literature on prematurity, low birth weight and peri-natal anoxia, including data from both retrospective and prospective studies, indicate that differential outcomes for these children are more related to the *quality of caretaking* that they subsequently experience than to the kind and severity of pre and peri-natal difficulties. Problems are attenuated or exacerbated by environmental responsiveness or neglect and this tends to follow a social class gradient (Sameroff & Chandler, 1975). Children from the lowest socio-economic groups are at double jeopardy because of the massive influence of socio-economic factors in both pre and post-natal development. Sameroff and Chandler, nevertheless, note "The self-righting tendency which appears to move children towards normality in the face of pressure towards deviation" (p.236).

Post-natal Stage

Early Intervention : The past two decades have witnessed a tremendous upsurge of interest in early childhood development and particularly in the provision of intervention programs directed towards children at risk for delayed or abnormal development. This heterogeneous target population

includes :

- children with identifiable mental and physical handicaps
- children who because of pre and peri-natal trauma are at risk for developing a wide range of disabilities, and
- children who, because of adverse environmental or socio-economic circumstances, are threatened with delayed or sub-optimal development.

These categories of biological and socio-cultural risk are not mutually exclusive and tend to interact in ways which compound the developmental hazards faced by so many children (Tjossem, 1976).

Examination of the growing literature on early intervention discloses that many exemplary programs have been developed for biologically-impaired children. These programs encompass a broad spectrum of handicap: the blind (Fraiberg, 1975); auditorily impaired (Horton, 1976) cerebral palsied and multiply handicapped (Barrera et al, 1976; Haynes, 1976), Down's syndrome (Hayden & Dimitriev, 1975; Kynders & Horrobin, 1975).

Most of these programs are compensatory in nature, specifically designed to capitalize on the child's residual strengths and capabilities, thus circumventing or minimizing within-child deficits. There is general consensus that intervention with biologically impaired infants and young children both enhances the development of the child and provides guidance and support to the family. In many infant programs, the mother, with professional support, becomes the major therapeutic change agent.

Evaluation of the effectiveness of these programs is complicated by the diversity of the target populations and corresponding differences in program emphases. Despite the difficulties involved, careful monitoring of such projects, including different models of service delivery, is essential in order to determine the most effective and parsimonious approach to meeting the needs of these children.

Intervention programs for psycho-socially disadvantaged children, on the other hand, tend to have a less specific focus. Based upon the assumption that economically and socially depressed environments are characterised by a dearth of growth-promoting experiences in the cognitive, linguistic and affective domains, programs for these children tend to encompass planned enrichment in all or some of these areas. Their ultimate goal is to circumvent or reverse the cumulative intellectual and scholastic deficits characteristic of the culture of poverty. Given the breadth of objectives embraced by these programs, it is not surprising that they exhibit considerable diversity. Modes of service delivery tend to fall into three broad categories :

- Programs which are based solely in the pre-school and are designed to improve intellectual, cognitive and language functioning as prerequisites for later success in school (Gray & Klaus, 1970; Weikart et al, 1970).

- Programs which include both home and pre-school components (Gilmer et al, 1970; Gordon, 1971).

- Parent-child, parent-infant interaction programs in which the focal strategy is the enhancement of the reciprocal relationship between mother and child (Levenstein, 1970; Karnes & Badger, 1969)

There is a dearth of valid and reliable research evidence concerning the relative effectiveness of different approaches to intervention with socially disadvantaged children, although Miller and Dyer (1974) have made a useful contribution in their comparison of four program models which provides a more differentiated analysis of program components and effects. In particular, the downward extension of early stimulation programs to include youngsters in the 0 to 3 age range lacks empirical validation (Keogh & Kopp, 1976).

Comprehensive evaluations (Bronfenbrenner, 1974; Stedman, 1977) reveal that, while many intervention programs have a positive initial impact on the cognitive and affective development of young children, gains tend to dissipate on termination of the program. Some intervention, especially those which stress parent involvement, do result in more enduring outcomes. The extent to which gains persist appears to be strongly influenced by the quality of the educational experiences to which the child is exposed on beginning school.

Bronfenbrenner, in reviewing the evidence available in 1974, concluded that the optimal strategy for early intervention appeared to be a phased sequence, beginning with parent intervention in the first two years of life, followed by group programs in the pre and early school years. At this stage parent participation acts as a catalyst for enhancing and sustaining the effects of group intervention.

We cannot ignore the recurrent finding that those children who benefit least and regress most are those from the most disadvantaged groups in society. Parents of these youngsters appear to have neither the energy nor the psychological resources to benefit from the parent intervention progrms surveyed.

The epidemiological studies which preceded the now famous Milwaukee Project (Heber & Garber, 1975) revealed that retardation is not randomly distributed in the most socially and economically impoverished groups, but is heavily concentrated in clusters of slum families characterized by low parental intelligence. The Heber study represents a massive longitudinal effort at family rehabilitation of this most vulnerable sub-group in society. Children participated in a daily program of intensive sensory, perceptual and cognitive stimulation extending from early infancy to school entry. Intervention also included rigorous efforts to modify the family environment. Mothers received training in literacy skills, home-making and child care, supplemented by rehabilitation services in the form of occupational training and placement.By the end of the experiment there was a significant mean difference of thirty IQ points between experimental and control groups. Follow-up testing has confirmed the maintenance of this divergence in IQ scores, although the mean scores of both groups

have deteriorated. Nevertheless children in the experimental group are still operating within the normal range of intelligence while their control counterparts risk classification as mildly mentally retarded.

The Heber study has been criticized for methodological inadequacies which both impute the validity of the results and make replication impossible (Page, 1973). Whether the program continued for a long enough period to prevent the eventual erosion of positive effects after the withdrawal of massive support and return to the deprivation of the ghetto environment can only be determined by longitudinal evaluation (Clarke & Clarke, 1976). Despite these criticisms, the contribution of this program should be acknowledged since it represents the first prospective approach to prevention of cultural-familial retardation.

Prospects

Tarjan (1976) reminds us that an 'ideal' preventive program

> "...*should ensure that every child will be born with a healthy central nervous system, that he will have a set of early experiences supportive of intellectual, emotional and social growth, and that he will be protected from damaging physical and psychological trauma*" (p. 774)

Dramatic advances in genetic technology involving gene splicing or recombinant DNA techniques will expand knowledge of the genetic factors involved in the aetiology of mental retardation and related disabilities. These increased diagnostic capabilities, particularly in the pre-conceptual identification of deleterious genes in the general population, could well involve conflict between the reproductive rights of prospective parents and the rights of children to begin life, intact in body and in mind.

Unfortunately diagnostic skills in this area have tended to outdistance effective treatment procedures. Organ transplants, corrective surgery for open neural tube defects and cranio-facial anomalies such as hypertelorism, dietary control for a wider spectrum of metabolic disorders all represent current and future possibilities in this field.

Advances in therapeutic and educational intervention to safeguard the chances for optimal development of high risk infants and young children will depend upon greater precision in the identification of vulnerable groups. This calls for a range of procedures, including determination of high-risk pregnancies, early screening and assessment. Since efforts to develop risk indices will require the simultaneous consideration of social and biological factors (Meier, 1976) there will need to be an interface between the behavioural and biomedical sciences. To illustrate this need for closer rapprochement Parmalee et al (1976) have recognized the strong influence of environmental factors in determining developmental outcomes for children at biological risk, such as premature infants. Other researchers (Heber et al, 1972; Scurletis et al, 1976) have used the demographic approach to identify

maternal characteristics such as health, level of education, IQ, marital status and age which are prognostic of high risk status in infants. Possibilities for both primary prevention and ameliorative and compensatory services inhere in these approaches (Tjossem, 1976).

In terms of ameliorative or compensatory intervention greater emphasis needs to be placed upon the specification of assessment data which can be translated into viable therapeutic/educational programs. Careful evaluation of both short and long term program effectiveness is a further requirement.

There is a small but impressive body of evidence which suggests that only radical long term environmental change can exert persistent positive influences on the development of children at risk for cultural-familial retardation (Skeels & Dye, 1939; Kirk, 1958; Koluchova, 1972, 1976; Heber & Garber, 1975). A large-scale attack on environmental impositions and deprivations would require significant changes in societal attitudes and priorities. In the short term, training of adolescent boys and girls for future parenthood and improved access to family planning services for the most vulnerable groups in society, who tend to under-utilize existing facilities, would constitute a promising beginning. Further experimental studies such as the Abecedarian Project (Ramey et al, 1976), which is a longitudinal and multidisciplinary approach to the prevention of developmental retardation, should provide insights into the relative contribution of specific components of intervention programs, which the Milwaukee Project failed to do.

Despite Herculean efforts, in both the biomedical and behavioural spheres, to prevent or ameliorate unfavourable developmental outcomes, we must recognize many aspects of contemporary society which compromise Tarjan's preventive ideal. The appalling toll of child casualties in accidents in the home and on the roads, and the frightening spectre of child abuse which haunts our collective conscience are but two areas of serious neglect in the provision of preventive and interventive services for young children. Gil (1971), while recognizing the personal tragedies and social waste involved in the physical neglect and abuse committed by individual caretakers reminds us that -

> *"Abuse committed by society as a whole against large segments of the next generation through poverty, discrimination, malnutrition, poor housing and neighbourhoods, inadequate care for health, education, and general well being are far more dangerous problems that merit the highest priority in the development of constructive social policies"* (p.394)

Are we prepared to accept this challenge?

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PREVENTION AND INTERVENTION
AN EDUCATIONAL PERSPECTIVE

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Introduction

The concept of providing education for children with learning problems at the earliest possible age is seductively simple. As educators, we usually accept without question the premise that early intervention will accomplish one of several possible goals: (1) eliminate the learning problem: (2) lessen its immediate impact; or (3) keep it from becoming more serious in consequence. Our acceptance is almost on a religious plane; the basic belief is not to be challenged. Why is our faith in early intervention and prevention of learning problems so steadfast? Why is it that we tend to accept on faith that early childhood education for the handicapped is essentially good?

Rationale

There are two primary sources of our beliefs: (1) logical or scholarly arguments to the point; and (2) empirical evidence.

Logical Arguments

Scholars in the field of child development have provided us with logical rationale. These arguments, based on personal observations, together with a limited base of research knowledge, have led us to accept the dictum of earliest intervention at face value. In essence, these theorists have provided us with the needed rationalization to accept what we already believe to be right. It gives us some comfort to know that the "experts" say it is so.

For example, Bettye Caldwell (1974) has stated that there are at least three sources for support of early intervention: (1) animal research; (2) child studies; (3) conceptual analyses.

(1) Experimental studies of animal behavior suggest that there are critical times for the introduction of experiences during early childhood development. In biological terms, the nervous system at earlier ages is endowed with greater degrees of "plasticity". This has been stated very well by Lipton (1976); "Critical periods for the acquisition or expression of behavior may be very brief or prolonged. They exist whenever the biological substrates of a psychological structure reach an appropriate age and stage of receptivity. At that state, specific environmental experiences are requisites for the development of specific behavioral capacities. If experiences come too early, they are not recognised. If they are not obtained at an appropriate time, that capacity may be lost for life".

Certain early childhood educators have been especially cognizant of this factor. Maria Montessori referred to "sensitive periods" in a child's life when it is optimum to expose him to certain learning experiences. Some educators have used the term "critical periods", emphasizing the fact that if the natural period of sensitivity to certain learning does not occur within that span, it will never be learned properly, if at all.

Whereas the Montessori sensitive periods principle supports one aspect of Lipton's statement, the Gesell Institute position keys in on another. As Lipton stated (above), experiences provided too early will not be recognized. Dr. Arnold Gesell, a noted pediatrician, stressed the principle that "training cannot transcend maturation". His emphasis on the notion that children will learn when they are "ready", has spawned many programs of "wait-and-see". In their best form, such approaches have analyzed individual children's developmental progress and provided learning experiences appropriate only to the levels reached by that child. In their worst form, such programs have taken a hands-off laissez faire stance and done nothing until the problem was too advanced for productive intervention. This is best expressed by those who say, "let's do nothing now' the child will *grow out of it*!"

(2) Developmental studies of children whose early childhoods were spent in less stimulating environments have shown them to have significantly different cognitive levels and learning styles. This thinking has spawned many early intervention programs for experientially deprived children in the U.S., the most notable being the "Headstart" programs.

(3) Major conceptual analyses of the role of experience in child development have given us reinforcement. Such scholars as J. McV. Hunt and Benjamin Bloom have concluded that environment can have its greatest impact during the first three or four years of life. Bloom's statement that 50% of intellect is developed in the first four years of life has given great credence to the cause of early childhood education.

Empirical Evidence

Empirical evidence has also accrued to give support to our belief in early intervention. Some reports state that early intervention has produced increases in I.Q. or other cognitive measures. Especially notable have been the studies of intervention with retarded children by Skeels (1966) and by Kirk (1958). Several more recent American studies have shown remarkable improvements in children. Perhaps the most well publicized has been the "Milwaukee Project" in which Heber, *et al.* (1972) have reported significant I.Q. gains among children with so-called "cultural-familial" retardation. Massive multi-faceted intervention programs were applied. The project included home instruction, early childhood centers, counselling, vocational training for parents, and other social/educational services. So much was attempted that it has been impossible to conclude which aspect(s) of the intervention were significant in effecting the reported I.Q. changes.

Other programs reported similar successes, e.g. Bereiter and Engelman (1966); Karnes (1969) and Hodges, McCandless and Spicker (1967). Let me restate that the most dramatic successes of American early intervention programs have been among children from low socio-economic environments. Even

these have not been entirely successful and have been challenged by critics in terms of their long-range effects.

Many reviewers indicate that early gains are lost in a "washout" effect in later years. That is, early gains are not sustained over a long period of follow-up. Hence, the final statement concerning the effects of early intervention among disadvantaged children remains to be concluded.

Meanwhile, empirical evidence is being gathered to determine the success of early intervention for *handicapped* children. The "Portage Project" in Wisconsin has served children of various handicaps, ages birth to six years (Shearer and Shearer, 1972); Horton (1976) has provided early programs for the deaf and hard-of-hearing in Nashville, Tennessee; the Meeting Street School in Providence, Rhode Island has been successful in programs with cerebral palsied infants and young children (Denhoff and Hyman, 1976) as have a number of sites around the U.S. which have participated in the National Collaborative Infant Project, sponsored by the United Cerebral Palsy Associations; Alice Hayden and Norris Haring (1976) at the University of Washington in Seattle have had celebrated success with early intervention for Down's Syndrome children.

Thus, we have seen in the U.S. exemplary intervention programs for the retarded, deaf, physically handicapped and language/learning disabled. Currently, the U.S. Government supports a number of "model programs" of early education for the handicapped. These are funded through the Federal Bureau of Education for the Handicapped (B.E.H.). Through the research and evaluation that is accompanying these projects, together with the technical assistance support from the University of North Carolina, they hope over the next few years to report even more extensive empirical evidence as to the value of early intervention programs designed specifically for the handicapped.

Research

We have spoken of logical argument and empirical evidence as to the success or failure of early childhood intervention. Certain portions of each of these have been drawn from research efforts. However, there are many reasons why it is difficult to draw firm conclusions from any research on this topic. The findings from such studies are so incomparable and contradictory that we are not attempting here to synthesize the reported literature in a definitive or systematic manner. I would like to offer some impressions of the problems faced by researchers in this area of investigation, problems which make acceptance of nearly all research findings questionable. (1) It is most often inappropriate to make direct inferences to children, based on animal research; (2) research designs for interventional studies are usually very poorly designed and population samples are so varied or undetermined that we can seldom generalize the findings to the design of new programs or practices; (3) from the typical interventional research it has been difficult to ascertain the precise processes of intervention that were utilized. This again hampers our ability to generalize the results; (4) there is a need for longitudinal research to test out long term and lasting benefits of interventions.

Despite these problems, there are some trends which can be extracted from the total compilation of research and evaluation efforts. Let me take great liberty and state my subjective impressions.

(1) In general, the research has tended to support the presence of positive inter-relationships between biological and environmental factors; both need to be addressed in treatment programs.

(2) There has also been identified a need for emphasis on language and cognitive factors in interventional programs.

(3) Reports have also stressed the importance of promoting carry-over of learned functions beyond the scope and time of interventional projects.

These conclusions lend strong support for home-based programs, and the need for multidisciplinary effort. Factors which strengthen community support and involvement and a more ecological approach are seen as important. It is with these factors in mind that we will address our remaining remarks.

The Educator's Position

Since none of the research and empirical observation is unequivocal, what should be the educator's position on early intervention? Let me first state a premise for special educators. In the instance of handicapped children, the damage has already occurred. Whether it is an insult to the peripheral or central nervous system; whether it is congenital or acquired; whether it is endogenous or exogenous; whether it is a solitary condition or a multiple handicap; whether it is metabolic, biochemical or neurogenic; whether it is mild, moderate or severe disability; the damage which created the handicapping condition and learning problem has been done. Our major goal as special educators is to minimize its effects. We must create an environment that will allow the youngster to learn through *adapted education*. We must teach the child to cope with and accommodate to the world despite his handicap. We are not concerned about prevention of the etiological problem *per se*. Our preventative role is one of amelioration, not obliteration of problems.

There are many instances where a handicap is clearly known at birth, or very early in life. Down's syndrome, cerebral palsy, severe deafness or blindness, are conditions which are usually detected in infancy. Even in some of these instances, there are physicians or psychologists or educators who fail to insure that total programs of early intervention are obtained. For those children with less obvious stigmata, less profound disorders, or less disturbed behavior, it is even less likely that any intervention will be recommended until well after the problem has developed. There is little probability that early involvement by special educators will occur in such instances. The educator is forced to wait until someone refers the child or asks for assistance.

If we take a generalists' point of view, however, the educator's role will be more pronounced. Educators should take a greater role at earlier

stages in the lives of children with learning problems. The most effective diagnosis and evaluation of a youngster's learning status is how he responds to instruction or the stimulation of his environment. In the past, it has been customary to let a problem develop to a severe degree before we have intervened. After a child has failed to walk or talk or read, well beyond the limits of expectation, we have attempted to remediate the situation. By then it may have been too late. We may have passed critical periods; the youngster may have developed phobias and reactions against certain types of learning; and he may have lost valuable teaching/learning time.

As educators, we must establish a system that will allow us to intervene at the *earliest* possible time. The traditional model of waiting until the problem has become extreme must be changed. Since we have no sure method of determining when or how much to intervene, we are automatically bound to err. I would rather err on the side of doing too much, too soon rather than doing too little, too late.

The optimal program for handicapped would be part of a program of early education for *all* children and families. Early intervention, observation and parent education would become the most important preventive measure and early intervention and observation of children would become our most valuable method of diagnosis and assessment. A citizenry of parents better informed in the expectations of child growth and development; and educators better trained to provide parents with developmental teaching skills and tools could become keystones in improved learning for *all* children. The parents would be pivotal agents in the detection and remediation of all learning problems.

Medically related information would still be important in terms of needed medical treatment, but the best indices of occurring and potential learning problems would come through the parents. In this scheme of thinking, the role of the educator would be as *parent* educator, facilitator, demonstrator and monitor. Educational program design, management, and assessment would be more critical than direct intervention. As the need for more intensive intervention developed, children could be entered into formalized pre-school programs. Let us examine this proposal more thoroughly by attempting to answer several questions:

1) Can regular early childhood models be useful?
2) What have we learned from exemplary projects?
3) Who will be the principal intervenors?
4) Can current models of mainstreaming, continuum of services and multidisciplinary participation in decision-making, as currently practiced in American public schools, be applied in designing delivery of service systems for the pre-school handicapped?

Early Childhood Education Models

Let us begin by determining what types of early childhood education models might be useful. Current practice in early childhood education in the U.S. is largely based on developmental principles. The basis for

traditional early childhood programs and curriculum is an amalgam of many schools of thought:

a) *The Naturalistic Approach* - maintains that the child requires little direct teaching. He should be allowed to develop fully in his own environment. Such a philosophy encourages permissive, non-structured curriculum; b) *The Gestalt Approach* - assumes that children purposefully interact with their environments. The child is thus encouraged to explore his life space and learn to be aware of his environment; c) *The Psychoanalytic Approach* - emphasizes the importance of emotions and feelings. The procedure is to let the child express these emotions and feelings through play; d) *Cognitive-Developmental Approaches* - deal with children's thinking processes. For example, Piaget has developed an entire theory which delineates the process of transformation in the structure of thought. A child should be taught according to the various stages of sensori-motor, preconceptual, intuitive and operational thinking. Similarly, Bruner has proposed that any subject can be taught to any child, as long as you approach it on the level of the child; e) *The Behavioristic Approach* - has largely spawned techniques for teaching specific behaviors. The assumption is, of course, that the child is neutral and all learning is through reinforcement. Programmed learning, token systems, precision teaching and specific programs such as DISTAR are a direct product of this approach.

In contemporary practice, we see each of these approaches utilized in combination with differing emphases. In some instances, it is difficult to discern from direct observation exactly which approach(es) are being followed. Children may be performing precisely the same activities or procedures for differing reasons. If, for example, we were to observe a young child building a tower of blocks, various childhood educators might draw differing conclusions about that behavior, dependant on their particular bias:

Naturalistic : The child is developing freely in his environment - realizing his potential and goodness.

Behavioristic : The child is building blocks because this behavior has been previously reinforced. The sequential building behavior can be further reinforced so the child will build bigger and more complex towers or structures.

Gestalt : The child is purposefully interacting with his environment and life space and experiencing self-fulfilment.

Psychoanalytic : This play activity is satisfying social/emotional needs; his approach to the task may reveal certain anxieties; hostilities, tensions or feelings.

Cognitive Developmental : The child is exercising certain pre-conceptual logical thinking processes. (Perceptual-motor-cognitive).

Child growth and Development : The child is operating like a three-year-old.

Most early childhood education in the U.S. is developmental. The fixed IQ or constant IQ concept has vanished. The assumption is that no matter what

the measured IQ, the child has more potential, and that the measured IQ can be improved through manipulation of the child's environment. It is also assumed that intellectual development in later life is largely dependent on early educational and life experiences.

The child development concepts that have been considered appropriate for *all* children have at least equal applicability to the handicapped. The knowledge of normal child development and stages is the basis for teaching the handicapped as well as the non-handicapped.

In the 1960s, we had a great social upheaval in the U.S. The prevailing social thinking was that there were tremendous inequalities in our society which needed to be rectified. And the arena for making these adjustments was the public schools. We had massive desegregation, school busing programs, and compensatory education. The assumption was that equality of educational opportunity would help to make all children eventually more productive citizens. In particular, it was assumed that early education programs would help increase the child's cognitive functions so that he could be better prepared to function adequately in formal schooling. Thus, programs like Headstart were established. Providing such programs was considered part of the civil rights movements of the 60s.

Some of the same thinking has been applied more recently in federal legislation for the handicapped. The federal Education of the Handicapped Act and accompanying Vocational Rehabilitation bills have been hailed as the civil rights for the handicapped. They include the equal rights of a "free appropriate public education" for all handicapped children. Unless offset by State laws, this education is guaranteed starting at age three and must be accomplished by the public schools.

Thus, any early education programs for the handicapped in the U.S. today must be viewed as developmental-remedial in nature and as part of a more general civil rights movement, as an attempt to atone for years of inattention and negligence.

The strength of the developmental model is evident when we examine one author's attempt to describe various models for preschool programs for the handicapped. Anastasiow (1978) has summarized the efforts of various sites around the U.S. which have established Handicapped Children's Early Education Programs (HCEEP). He has grouped these programs into four types (p.89): a) The normal developmental model, following the established procedures of existing preschools for normal children; b) the behavioral model, utilizing experimental analysis of behavior; c) the cognitive developmental model, translating Piagetian developmental principles into classroom strategies; and d) the cognitive learning model which combines Piagetian and/or cognitive theory with behavioral approaches. Each of these approaches has some developmental basis. As Anastasiow concluded:

> *"All programs whether they feel developmental tasks are acquired through training, through genetic blue prints, or through environmental-biological interactions, have constructed some notion of milestones in development and have also divided development into such areas as motor, cognition, language, social skills, self-help skills, and socio-emotional development. The models differ on how they perceive these skills to be acquired, but by large they agree that the milestones should be met."* (p.91)

Anastasiow pointed out several features which seem to be agreed upon in these early childhood programs for the handicapped. Nearly all provide forms of positive reinforcement, degree of structure of time, and play activities ("play is the work of the child"). Continuous in-service, ongoing teacher-supervisor interaction, and low teacher-to-child ratios were considered important factors in the success of such programs.

However, it is clear from reviewing the reports of projects for the handicapped that modification must be made from the "normal" models. Any program for the handicapped must include provisions for individualization and for circumventing the particular handicapping condition.

Our first question was: "Can regular early childhood models be useful?" Our answer is "yes". They can serve as a base for determining developmental levels, normal expectations and general approaches, together with some suggestions for specific techniques. Programs for the handicapped, however, will need to be *adaptations* of the established early childhood approaches. The cognitive-learning model, which combines developmental and learning theory appears to be the most applicable. That model can be adjusted readily to the individualized needs of handicapped children. The most critical factor is that educators who plan, direct, or manage early childhood intervention programs for the handicapped must be fully knowledgeable of developmental and learning theory, as well as the specific characteristics of the handicapped populations they intend to serve.

Exemplary Programs for the Handicapped

Our second question was "what can be learned from exemplary programs for the handicapped?" It is extremely difficult to generalize from the research of early childhood handicapped programs. The results have been equivocal and contradictory. There have been few well controlled studies of the long-range benefits. Our major rationale continues to be based on animal research and studies of the effects of intervention programs on the disadvantaged. As Tjossem (1976) concluded: "Placement of handicapped children in these programs, then, remains a value judgment." (p.21). Or as we stated earlier, it is largely a matter of faith and belief.

Although successful American programs for early intervention with the handicapped have been reported, they vary considerably in their nature and the types of handicaps they serve. They often are short-lived because of funding problems and they often change in their nature after being reported. The various projects represent differing *delivery of service models*. We will discuss representative programs for three types: 1) extension of the traditional school model, 2) the medical-clinical model; and 3) a generic teaching model with parents as the key teaching agents.

School Model. Horton (1976) has operated a successful early intervention program for hearing impaired infants and young children through the Bill Wilkerson Hearing and Speech Center and Vanderbilt University, Nashville, Tennessee. She has stressed detection of the hearing impairment in infancy, immediate intervention through intensive parent teaching, and

maximization of residual hearing to enhance natural language acquisition. The parent brings the child to the center, much the same as bringing the child to school. For children below age three, this program has incorporated a parent teaching home. Parents bring their youngsters to the "home: where they are trained to incorporate normal daily activities (e.g. kitchen help) into learning tasks. The emphasis is on oral language skills. However, behavior management techniques and some counselling services (for dealing with feelings) are incorporated. It is important to note that Horton views the parents as key agents of change. As the youngsters reach the age of three, an oral preschool program for the deaf becomes the mode of instruction. This preschool includes some normal hearing youngsters, integrated to provide good language and behavior models. Horton has reported research indicating positive effects of early intervention on language and educational achievement.

In my own public school program in Mesa, Arizona, we have recently initiated a preschool program for deaf children, as a downward extension of our already existing programs for children K - 12 grades. We have chosen to combine the parent/home training with school-based instruction. We have instituted the Total Communication approach for such children. To our knowledge, this is the first public school based preschool program for deaf children in the State of Arizona. We are confident that it will be an important cog in the total educational program for such children in our schools. The Horton program and programs like ours are essentially based on the model of extending the school downward and modifying the curriculum to include non-academic subjects, while including the parents in the process.

Medical Model. In the area of physically handicapped, a well publicized program has been operational at the Meeting Street School in Providence, Rhode Island. There, Denhoff and his associates (Denhoff and Hyman, 1976) have developed a team approach to serving cerebral palsied preschoolers. The medical model of referral, diagnosis and prescriptive remediation is followed. A diagnostic/prescriptive team is headed by a pediatrician and includes a physical therapist, occupational therapist, speech and language specialist, social worker and early childhood specialist. Other specialists may be involved as needed. After the team works out the evaluation at the center, parents are given information on how to manage the child at home and how to obtain appropriate supportive services. Although home visits are made, they appear to be largely for gaining more information on the child and his progress rather than teaching or modelling *per se*.

In our school system, we have utilized this team approach with occupational and physical therapists, speech therapists, psychologists, and special educators participating in the program planning. We keep close liaison with community based programs and services. Thus, we currently apply the medical model for serving physically handicapped youngsters in the schools.

Parent/Home Teaching Model. The Portage Project in Wisconsin, has been the American prototype for the use of parents as teachers. The staff claims to serve all types of handicapped children, ages birth to six years. A home teacher spends 1½ hours per week in the homes, assisting the parents with methods for teaching their children. The teaching model is precision

teaching; the curriculum (or scope of objectives) includes the traditional developmental areas of language, self-help, motor, social and cognitive; the parents are trained to target on specific behaviors through use of a developmental checklist, a set of curriculum cards (stating behavioral objectives/activities) and a manual of instructions. Shearer and Shearer (1972) who were the authors of the Portage Project state that this method has several educational advantages. (1) The teaching is done in a natural environment, therefore, it is more likely to generalize; (2) there is constant direct access to a full range of behaviors; (3) the parent training insures family involvement; and (4) individualization is a reality. The Portage Project utilizes an educational model. It is educators who manage the program, and the goals/objectives are educational. Need for other resources such as counselling, psychiatry, social work or medicine must be obtained from other community resources. The educator will inform the parents of such services and encourage their use, but the decision as to whether to actually seek such services is left to the parent(s).

Of interest is the fact that although professionals and paraprofessionals from several specialities are involved (e.g. special education, speech and language, psychology) *each* functions as a home teacher. This is a *transdisciplinary approach.* Treatment programs in both medical and educational settings have gradually evolved from a unidisciplinary, to an interdisciplinary, to a multidisciplinary, to a transdisciplinary perspective.

In the *unidisciplinary* manner, each professional carries out his or her service to the child, oblivious of other occurring or needed professional contributions. This has been improved slightly by the *interdisciplinary* approach, wherein the child is referred to other services. Each additional professional merely "adds on" his service with a little coordination or integration. As more and more specialists have become involved, the need for coordination has increased, and the *multidisciplinary* model has resulted. Under that mode, it is typical for members of severe professional specialities to confer and share their results of evaluations, then plan a program and proceed. However, it is usually the case that each professional still maintains his territorial speciality in implementing his role in the intervention. Thus, the speech therapist might report to the multidisciplinary team about speech problems during the planning meeting and then provide that phase of treatment during the intervention; similarly the physical/occupational therapist, the psychologist, the special educator or others, would maintain their professional territoriality during evaluation, through the planning stage and in providing treatment.

The *transdisciplinary* approach is similar, with one significant difference, the territorial boundaries are dissolved during the treatment or intervention stage. For example, the speech and occupational therapist and physician might pool their diagnostic information and special expertise and conclusions from their observations of the child. They would jointly devise a feeding program, but any one of them, or another designee (such as a parent) might actually carry out the treatment (planned intervention). The special educator, the speech therapist and the early childhood specialist might pool their knowledge of the child's language status, but any one or combination of these persons could carry out the designated remedial program. Again, another party, such as a parent, could be the principal caregiver after receiving some degree of training.

The transdisciplinary approach can be utilized regardless of the curriculum model or the types of professionals involved. It requires professionals who will focus on the child's needs as their primary area of concern. They must be able to drop their professional territorial imperatives. These professionals must be competent in their fields, but self-sufficient and secure in their profession when dealing with others. Leadership roles must be flexible and changeable. Mutual professional respect must be present. It is not easy to develop this type of team effort.

The transdisciplinary approach is difficult to operationalize for some professionals, especially when the parent is elevated to equal partnership on the team. This is even more true if the parent is given primary responsibility for treatment.

It is difficult for some professionals to accept the concept that a person with much less training and/or education than they may be able to provide competent direct teaching service.

In the transdisciplinary approach, the role of the professional shifts from direct service to parent-teacher, facilitator, or manager. In this way, the confusing number of persons with whom the child must interact is reduced and the mother/child relationship is enhanced. Such an approach is the direction which we think early childhood intervention programs should develop. Through successful staffing procedures and home training programs, the parent can become the key member of the transdisciplinary team.

The Principal Intervenors

Another question that we raised was: "Who will be the principal intervenors for early childhood intervention with the handicapped?" It is clear from the statements above that the parents should have a primary role. As stated by Haynes (1976):

> *"A major objective of the transdisciplinary approach is to strengthen parent skills and understanding in the care and training of their infant, to minimize their dependence upon outside intervenors and, by these actions, to maximise the natural advantages inherent in parental care."* (p.525).

After reviewing the major models for intervention with high risk infants, Tjossem (1976) concluded that family involvement is paramount in the success of intervention programs for young children. This was based on the assumption from Bronfenbrenner (1974) that child growth in learning is related to the "broad context of early experience, primarily in mother/child interactions... the mother is both a responsive initiator and a sustainer of the child's early experiences." (p.18)

When Bronfenbrenner reviewed experimental studies of IQ gains, he concluded:

> *"The earlier and more intensely mother and child were stimulated to engage in communication around a common activity, the greater and more enduring the gain in IQ achieved by the child."* (p.25)

Thus, he concluded that family involvement is critical to the success of early intervention programs. Again, please note that these findings were based on studies of intervention programs with disadvantaged children. Whether the approach is equally applicable or relevant for the handicapped is largely presumption.

Thus, we have concluded that the family, particularly the mother, should be principal intervenors. Obviously, there must be many others who will serve to guide the family in this endeavor.

But what is the role of the educator in this matter? Some professionals have raised the concern that when schools become involved in early education programs, essential features are affected. For example, there is a tendency for the professional educators to take over parent responsibilities. Some have disagreed strongly with the premise that the public schools should be the setting for preschool intervention. Fishhart and Pastor (1977) began a recent article in the University of Chicago's *School Review* with the following attention-getting statements:

- *Any parent who has struggled with the bureaucracy to secure special services for a child, "just knows" that the schools cannot provide early child development services.*

- *Any parent who has a creative child can tell you that the public schools are generally inflexible.*

- *Anyone who has sought educational alternatives for children will tell you that a public school system is slow to accept change.*

- *Everyone knows that parents only come to school for assemblies or if they have been called in to talk about their child's problem* (p.38).

The American Federation of Teachers, an aggressive U.S. teachers' union, stated several advantages for such programs in the schools (1976):

(1) To fill empty classrooms in declining districts;

(2) To provide jobs for elementary teachers who would be unemployed;

(3) To take advantage of already existing governing structures;

(4) To capitalize on the long-range existence of schools and the continuity needed between early childhood and later education programs; and

(5) To utilize already existing mechanisms for standards, certification, and job security.

But Fishhart and Pastor disagree. They feel that the public school commitment to early childhood education is low; that it will be extremely difficult to provide flexible programming and the support services necessary to complement the classroom activities; that teachers trained in the

elementary school model will be hired for preschools, even though their training and/or commitment is not appropriate; and that parent involvement will wane. All of these concerns would be exacerbated for handicapped programs.

However, there *are* special educators who believe the *schools can do the job.* Haynes (1976) described one of the primary roles of the educator in preschool intervention as helping to define for others what the child should learn at certain life stages, particularly in relation to his type of handicap. She also posited that a major objective of the educator should be to teach other team members how to help the child learn.

Thus, we have disagreement as to whether early childhood educators for the handicapped should align themselves with the public schools, or continue their current trend of operating in private and medically oriented facilities. The Education Commission of the States (1975) has suggested a broader, more ecological approach: "what is required is a statewide comprehensive approach, initiated and supported at the highest level of state government and implemented by local communities, according to their need." (p.34). The advisability of assigning preschool education for the handicapped to the public schools was best stated by Hobbs (1975), in his book, *The Futures of Children.* He has summarized the arguments *against* public school involvement by expressing the schools' unwillingness to accept costly additional comprehensive programs, and the medical/social welfare professionals' concerns that the schools are incapable of dealing adequately with such complex problems. We tend to agree with Hobbs' position that the role for coordinating services to most handicapped children from earliest identification through the school years *can* be successfully accomplished by the schools. His reasons were as follows:

> *"The school is the one public agency normally responsible for helping the family induct the child into society. The principle of fullest possible participation by the handicapped child in the normal experiences of childhood favors the school as the most appropriate helping agency.*
>
> *The schools already have responsibility for providing educational services to the majority of exceptional children; the services could be extended to include other required services and to include children of preschool age as well.*
>
> *Once the special disabilities of exceptional children are attended to, their problems (apart from normal nurturing by parents, a need of great importance) are predominantly educational. Once glasses are obtained, a hearing aid fitted, or psychotherapy started, educational methods (ranging from speech therapy to remedial reading to socialization) must be brought into play. Schools have more competence in educating children than do other agencies.*
>
> *Schools are geographically dispersed, and they serve total populations by geographical area, an essential requirement for a comprhensive service program for exceptional children.*

Schools have buildings that are seldom used to capacity. Furthermore, space in school buildings will become increasingly available as a result of the declining birthrate. Use of school buildings to house comprehensive services for exceptional children would effect great savings in capital expenditures.

Parents and children are familiar with schools, their location, and their ways of operating. Educational leaders have for many years advocated "the community school", or the school as a locus or sponsor of many community-wide human-development activities. The proposal advanced here embraces this concept in the service of exceptional children.

Schools have a tax base in states and local communities. The full array of services required by exceptional children from earliest identification on should not be dependent entirely on federal or private sector funding.

We recognize that the public schools in some communities simply may not be able to carry the burden (and gain the educational advantage) of the responsibility here proposed. When the schools of a community are judged to be inadequate in the task, some other single agency should be formally charged with the responsibility".
(pp. 200-201)

Application of Current American Educational Models for Delivery of Services

Thus far, we have concluded from the series of questions posed that traditional early childhood models for education can be adapted to the handicapped and that the parents and educators should comprise a workable team to accomplish this goal. Exactly how this might be accomplished is posited in our answer to the final question: "Can current models of mainstreaming, continuum of services, and multidisciplinary participation in decision making, as currently practised in American public schools, be applied in designing delivery of service systems for the preschool handicapped?"

The primary effort in public school education for the handicapped in the U.S. today is to follow the basic tenets of our Federal Education of the Handicapped Act. The intent is to provide a free *appropriate* public education for all handicapped children within the least restrictive environment. This is a representation of the principle of normalization. The child is to be educated in as near to the normal setting as is possible. Thus, we are experiencing deinstitutionalization, placement of handicapped children in regular classes (mainstreaming) and decategorization of learning problems. There is a changing pattern of professional roles. Our very concepts of education are changing. For example non-academic areas of social skills, self-help and maintenance of bodily functions are now considered a legitimate educational concern. The parents are accepted as equal partners in the decision-making for placement and programming. And every effort is made to insure equal rights and due process of the law for each handicapped child. Some legislation is even mandating early childhood education.

In this type of atmosphere, programs for early intervention are being developed. They are being operated in public schools as downward extensions of existing programs for the handicapped. It is being recognized that mere early identification of children's problems is not enough. We must intervene earlier and have ready access to programs as soon as problems are apparent. Of course, the needed time for intervention may vary according to the type and severity of the problem, but interventional strategies, rather than identification strategies seem most powerful. An ecological perspective must be followed. There must be some plan for considering medical, educational, psychological and social factors.

The key to success is the full and appropriate involvement of parents. Our model for school services is now to establish many options along a continuum of services, with a decision-making process for determining which options to use. For preschool children, that will mean assuring that (a) regular preschool education and medical services are available to all; (b) special educators can be "mainstreamed" into these services to assist with problem children as they are detected (children would be treated in their preschool/home mainstream unless problems are profound); (c) special classes or resources on a continuum of services would be developed as needed; (d) parents would be intimately involved in the process! The key to this system is involvement of the family. Full success is dependent on intervention before problems develop. The mainstream for the child is his home, his neighbourhood, his community, long before he experiences a school setting. It is in that family milieu that we must first see and meet his problems. It is there that we should first intervene. Our task is to create a child-focused, family agent-oriented, cascade of transdisciplinary services... Tjossem (1976)suggested a parent approach in which early medical, social worker observations lead to educational involvement at the earliest possible moment. The principles he recommended were that:

> "*(1) Supportive services are initiated early, (2) are offered on the basis of perceived risk and need, not diagnosis, (3) are family oriented, (4) support and enhance the mother-child interaction system, and (5) are sustained.*" (p.25)

Such a program is ecological. It is community based. It will require massive public education and the development of full services, accompanied by an appropriate decision-making process. But, it can be done. Our children only wait for the necessary advocates to accomplish it.

In conclusion, we must pose the basic question to be addressed by this paper: "What is the Educator's role in earliest intervention for children with learning problems?" The answer is simple and direct. "The role of the educator is to educate". However, the public school educator's primary role may not be as the caregiver for handicapped preschool children. Rather, the actual teaching may be directed to other individuals: (1) parents, in order that they may serve as primary intervenors; (2) other educators so that they may be better informed in areas of child development and the effects of handicapping conditions; and (3) other professionals, to allow for transdisciplinary effort in planning and implementing programs. Only a select few educators will provide direct teaching to children. Such teaching will most likely be with "older" preschool children, preparing

for transition into formal schooling, or with the very severe and multiply handicapped youngsters who need more intensive assistance. This evolution of an educational service model will not be established quickly. Furthermore, any developments are subject to the influences of many internal and external forces. We shall merely have to wait to see how successfully society can implement a workable solution. We think it can and should be done.

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PREVENTION AND INTERVENTION
A MEDICAL PERSPECTIVE

W.G. McBride

Approximately one third of all admissions to Children's Hospitals in the developed countries are for genetic disease congenital malformations and/or mental retardation. It is claimed by Meier (1973) that the number of children born with absolute and relative developmental disabilities is increasing - (developmental disabilities is a generic and recently popularised term which encompasses mental retardation, epilepsy, cerebral palsy, autism and learning disabilities). Ironically technological advances now enable more vulnerable children to survive. Unfortunately, the growing complexity of our society and the sheer survival value of higher cortical activity, which tends to suffer damage first and be most severely affected, places these affected individuals at an even greater disadvantage. Many more children who have been born with various degrees of developmental disabilities are surviving, entering school, and subsequently seeking employment and the "good life" as far as they are able. It is neither humane nor prudent - from the larger socio-economic point of view - to assume the attitude that the birth of a handicapped child is simply the parents' bad luck.

Development disability is a relative term; compared to Einstein most people are retarded in mathematical comprehension.

From before the turn of the century through the 1940s there were two basic, long entrenched assumptions that influenced both the science and practice of child-bearing; "fixed intelligence" and "pre-determined development". These two assumptions suggested that intelligence is an inherited capacity which develops to a pre-determined level at a fixed rate. The IQ accordingly, remains constant throughout life. Proponents of this point of view overlooked the fact that deprivation of experience can cause marked retardation in the rate at which the infant organism developed. The pioneer studies of Spitz (1945) have great influence in establishing that intelligence is not fixed, but is plastic and modifiable, and that adequate mothering during the first year of life is crucial for optimal growth and development. Spitz's studies were concerned with infants from a "foundling home" where infants received very little attention or stimulation after being weaned from their mothers at 3 months of age. The other infants were in a "nursery" attached to a penal institution for delinquent girls where the mothers were allowed to play with and attend their children every day throughout the first year. The foundling home children came from well-adjusted mothers whose only handicap was that they could not support themselves or their children. The nursery children were mothered mostly by delinquent mothers some of whom were physically handicapped, psychopathic and criminal. The mean developmental quotient for the children in the "foundling home" dropped progressively during the first year of the infant's life, from a starting level of 131 to a final level of 72. On the other hand, the nursery children rose from 97 to 112 by months 4 and 5, remained level to months 8 and 9, then dropped to 100 for months 10 and 12. The means for

the first four months was 101.5 and for the last four months 105. For a long time these findings were unfortunately explained away. However, identical twin studies such as those by Hunt (1961) have unequivocally established the important role of environment in maximising the child's intellectual growth. Hunt noted that (1) the correlation in IQ of identical twins reared apart is lower than that of identical twins reared together (2) the IQ of infants obtained at successive stages show considerable variation (3) the IQ of foster home children rises with nursery school experience (4) children reared in orphanages score lower on tests than do children reared in foster homes.

Genetic disorders

Although it is over 130 years since Gregor Mendel laid down the basic rules of genetic inheritance it is only in the past twenty years that genetic disorders have been closely studied. Some disorders with genetic components include mental retardation, congenital malformations, certain malignant diseases in families, diabetes mellitus, hypertension, schizophrenia, skin and allergic disorders, and coronary artery disease. Genetic disorders with ethnic and racial predilection are found in Mediterranean races with Thalassaemia, Jews with Tay-Sachs disease, Blacks with Sickle cell anaemia and Caucasians with absence of R.H. factor.

Genetic predisposition to certain disorders has been recognised only in recent years. Individuals with glucose-6-phosphate dehydrogenase deficiency may have severe reactions to certain drugs. Anaphylaxis to an antibiotic might be the first indication of a serious genetic predisposition in the family.

MacDonald Critchley has estimated the incidence of dyslexia, specific learning defect, (commonly an autosomal dominant) in western countries to be from 5%-10%.

Mental retardation

Approximately 3% of the general population have IQs of less than 70. In addition another 2% are below 80 and thus unable to keep up with a normal school curriculum.

The causes of mental retardation frequently have genetic components quite apart from the many well-known genetic disorders such as chromosomal biochemical abnormalities characterised by mental retardation. A significant number of cases with so called "idiopathic" mental retardation do have in fact, solely or partly genetic 'origins'.

In recent years, the perception that mental retardation regardless of cause - is simply a facet within a spectrum of possible abnormalities, has given use to the much more realistic and helpful concept of "developmental disability".

Generally it is agreed that there is a decrease in mental handicap related to increasing birth weight. Our study at Foundation 41 (1979) indicates that family background variables were the most powerful predications of intellectual ability in the child. Higher occupational status, higher maternal intelligence, and lower parity related to higher IQ. Perinatal descriptors and delivery method did not contribute significantly to intellectual ability in the child.

Collins and Turner (1973) surveyed the birth weights of 1345 mentally retarded children (excluding those with Down's syndrome) 75% of whom had IQs less than 50. Small for dates babies (i.e. those with a reduced rate of foetal growth) occurred in 14.4% of the cases. In contrast they noted that the incidence of prematurity alone was only marginally higher than that found in the normal population. The association of very low birth weight with severe mental retardation and cerebral palsy is well established. Premature and full-term infants with low birth weight may also have association malformation syndromes.

MacDonald (1973) retrospectively surveyed all severely mentally retarded children (IQ < 50) born in Quebec Province in 1958 and living there a decade later. She observed an incidence of 3.8 per 1,000 children aged about 10 years in a study of 507 cases with almost complete ascertainment (256 children with severe retardation had died before 10 years of age, thereby yielding a more accurate incidence of 5.4 per 1000 live births in a cohort of 763 cases).

These results were consistent with previously reported studies in the same IQ category.

MacDonald estimated the respective contributions to various causes of severe mental retardation in the 507 cases she studied as follows:

Factor	Percentage
Down's syndrome	23
Single recessive genes	21
Postnatal disease	8-11
Postnatal injury	1
Low birth weight	3
Perinatal damage	6-9
Kernicterus	1-2
	63-70

In about one third of cases no "clue to cause was evident". The incidence of major congenital malformations (with or without mental retardation) has been estimated to be from 2.1 to 4.1% - Crown Street 3%. By Polani's (1973) calculations single gene disorders occur in 1.3 to 1.7% of all infants. Chromosomal abnormalities affect at least 0.5% of all infants.

WHAT CAN WE DO?

Prevention of Mental Retardation

Women must be taught the importance of ante-natal care, we must educate parents to the need for early and continuous ante-natal care and impress that good ante-natal care will reduce the incidence of prematurity as well as related perinatal morbidity and mortality.

Alcohol

It has been shown that alcoholics have an increased incidence of children with mental retardation. *Symptomatic Hyperglycaemia* if untreated in the newborn, probably causes permanent brain damage whereas a symptomatic hyperglycaemia does not cause damage.

Neonatal Jaundice

If the bilirubin level rises above 340 milliosmols, the bilirubin is likely to damage the brain cells. Jaundice in the new born must be monitored with care.

Post Immunization - H. Pertussis - Immunisation for Diphtheria.

The screening of patients who are candidates for chromosomal disorders e.g. women over the age of 35 and those with family history of mental retardation (e.g. X-linked mental retardation).

Neonatal Chromosomal screening

Chromosome surveys were done initially on particular groups of individuals, essentially as part of diagnostic evaluation. Hence, extensive surveys were performed on institutionalized persons with mental retardation or congenital malformations.

Subsequently, the observation was made that an unusually high incidence of XYY individuals was observed in males confined to maximum security institutions. Because of the multiple questions raised by these observations on XYY individuals in the penal institutions Court-Brown turned to neonatal chromosomal screening aimed at identification at birth of XYY males with continued surveillance thereafter. Since 1968 a number of groups have initiated newborn chromosomal studies.

From these studies the frequency of structural chromosomal aneuploidy has been determined. Much has been learned about human chromosomal variation, the relationship of some karyotypes to the phenotype, and the possible associations between behaviour and learning problems. The detection of

structural rearrangements may be of no benefit to the patient so diagnosed, but may be of great significance to the parents - in light of the possibilities of prenatal genetic diagnosis in subsequent pregnancies.

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PREVENTION AND INTERVENTION
A SOCIAL-PSYCHOLOGICAL PERSPECTIVE

B.H. Watts

We come now to the third of three major perspectives on children with learning difficulties. We commenced this morning after the overview paper by having Dr. McGrady comment on these children and their families from an educational perspective. Then Dr. McBride shared with us a medical perspective on these same children and their families. My task this afternoon is to present a social-psychological perspective.

In our various capacities we are concerned about prevention and intervention within a given society, Australia. There are at least six characteristics at the macro level that we need to bear in mind as we search to develop adequate programs of prevention, and to devise and implement effective programs of intervention; our thinking and planning must be related to our specific clientele. Firstly, we are a culturally pluralistic society. We practise a diversity of lifestyles; we are committed to a diversity of values; we do not all speak English as our first language. In the Australian population today, there are highly significant numbers of people who have come to these shores with a language other than English as their first language, and vast numbers of children who come into our classrooms inadequately practised and accomplished in the language in which they are asked to learn. And we sometimes ask: "Why do they have learning difficulties?"

Secondly, we live in communities that range from the large cities of Sydney and Melbourne (in the inner suburbs or in the very different environments of the outer suburbs), through the provincial cities to the small towns and isolated mining settlements and cattle properties. Where we live in this country controls in some large measure the access we have to measures of prevention and to programs that are devised to meet our needs.

Thirdly, when we consider programs of prevention and intervention, we must remember that the surrounding social and political environment and its values determine the range of living environments to which we condemn a considerable proportion of the Australian population. We need not look beyond poverty for many of the immediate determinants of learning disabilities. It is the social and political policy of any country that decides the extent to which poverty shall be allowed to exist. The surrounding social and political climate determines also which programs will be funded, which objectives will be supported, where the priorities will be placed; as educationalists, psychologists, as therapists, as doctors, we try to ensure that the policy planners hear our voices. In my view, we do not always try as assiduously as we might; where we do try, we are less successful than we would want to be or indeed deserve to be.

Fourthly, the immediate community which surrounds the child, his family, and the professionals who work with him, through the attitudes and behaviours of its members, helps determine the outcomes of programs. Programs do not and cannot exist in isolation from the community which provides the child's social-psychological life-space.

Fifthly, as Dr. McGrady has commented, the primary educators of the child with learning difficulties, as of all children, are his parents. This is a complex issue and one to which I plan to return later in this discussion.

Finally, in presenting this perspective on children with learning difficulties, it is important that programs of intervention pay due accord to the complexity and individuality of the child with learning difficulties, who, as he develops, affects and is affected by his intricate and multi-faceted personal and social environment; I believe some intervention programs are in danger of failure, because they do not pay due homage to the individuality of the child who is the focus of their concern.

I turn now to the issue of prevention. We have heard Dr. McBride examine issues relating to genetic counselling and basic research. I wish to comment only briefly on three aspects of programs of prevention. Whether or not we achieve in Australia effective programs of prevention will depend, firstly, on political and public support of relevant research. There is no short-cut. I am thinking here, not only of basic research, but also of the monitoring and evaluation of programs of prevention. I would emphasise in this regard the special problems of mounting such programs in the more remote areas of the country. While the majority of us live in highly urbanised environments, quite significant numbers of people live long distances from the specialists and the clinics. Locational as well as socio-cultural influences pose questions relating to prevention programs that must be addressed by researchers.

In terms of prevention, political and public support of programs must be, I believe, aimed at combating the existence and the debilitating effects of poverty. In 1972-1973 the Poverty Commission study indicated that 7.3 percent of all families with dependent children were very poor families. Not poor, but very poor, that is, below the poverty line. I would assume that in the light of the events of the last seven years, a replication of that survey would indicate that the number of families with dependent children below the poverty line would exceed that earlier figure of 7.3 percent. We cannot ignore in our planning for prevention of learning difficulties the subtle and the unsubtle effects of poverty.

Finally, if we really are serious about educating the public to help achieve the goal of a diminution of the incidence of all sorts of handicapping and inhibiting conditions, then we must have education programs which reach all of the community, especially those people and their children who are vulnerable. I would like to see an analysis of these programs of public education to ascertain whom they reach, to determine whether they are planned and delivered in such a way as to be meaningful and effective; for example, which of the media are used? What level of literacy is presumed on the part of the people to whom the programs are directed? In what language, or languages, are the messages conveyed? We need to know whether

the programs are planned in such a way as to be consonant with the values of the various cultural and social groups within Australia; for example, the values of some of the cultural groups in respect to practices such as genetic counselling. I know of no research in this area that would be helpful to us in this regard. If we are to prevent the various handicapping conditions and if, as the evidence would suggest, some people are more vulnerable than others, then we need to ensure that education programs are not only planned and delivered, but planned, delivered and received; as those of us in the room who are teachers know, one can apparently teach without one's clients learning.

In examining the question of assessment, from a social-psychological perspective, I would place a greater emphasis on the social than on the psychological issues at this point; throughout the remainder of this workshop those with a particular interest in the latter aspect of assessment will have opportunity for extended discussion and reflection.

We need to consider the purposes of assessment. These seem to me to be threefold: we assess to provide diagnostic information for use as a basis for program planning, to check progress towards goals, and to guide us in research designed to help us to understand patterns of incidence, so that adequate planning can be undertaken. In particular, assessment programs are required to help us understand the intricate inter-relationships among variables which are implicated in learning disabilities. These seem to me to be the only justifications for assessment.

One of the problems in cultural pluralistic societies is that our techniques of assessment are indeed inappropriate for many of the people to whom they are applied. Later in this week some of us will have the opportunity to work together to examine the issue of assessing culturally different children. For many children, our assessment instruments are inappropriate, leading to erroneous conclusions about the children, primarily because we approach them as if they were members of the middle-class dominant culture. We assume, often wrongly, that our games, our intelligence tests, are tasks in which they would automatically wish to become involved. We over-generalize, and in an inappropriate fashion, from our own cultural norms to children from other cultures. We assume, for example, all children will work with speed, and so we time their reactions; in some cultures, speed is irrelevant. The language that is used to assess children is typically the language of the dominant group, and thus we attempt the task of trying to determine the learning potential of a child through the medium of a language of which he has only an imperfect grasp.

I think some of the most exciting work that has been done in this area is the work by Jane Mercer at Riverside in California (Mercer, 1978). Her work has involved the re-norming of the WISC-R, so that separate norms are available in California for three ethnic minority groups. This means, for example, that a Mexican-American child's performance can be compared not only with that of the national standardization sample but, perhaps more significantly, with that of other children who have shared his developmental environment, and have thus had somewhat similar learning experiences and opportunities. This latter comparison permits a more

valid estimate of what Mercer terms the child's learning potential. In a culturally pluralistic society, psychologists and educationists who assess others must look to their instruments for their validity and their cultural appropriateness.

Another problem in assessment that we have not adequately resolved is the communication of our prognosis to parents. Sometimes professional people skilled in clinical assessment are somewhat less skilled in communicating with non-professionals and particularly with parents; sometimes parents for a variety of reasons have difficulties in receiving the messages from the professionals. This is, as we all recognize, an issue of high significance.

This leads logically to consideration of some social-psychological issues in respect of programs of instruction. We need to determine the focus of such programs. I agree with Dr. McGrady that parents are the primary educators of their children. It is immoral and furthermore lacking in commonsense to take any other view. Too many intervention programs have in effect said to the parents: "You are very inadequate parents, or your children are very inadequate; and we, the experts, will help you; we will provide what is necessary". This, I think, is what Dr. McGrady was speaking against. There is no doubt that we will fail if we exclude parents from exercising their primary responsibility in fostering the development of their children. But herein lies a problem which needs our earnest attention. We are inclined sometimes to consider parents as if they were all the same. Not only do we frequently tend to deny the individuality of children but additionally we set up as it were a mythical parent image and we address ourselves to that image. Perhaps if we listened to parents more we would be less likely to commit this error. Let us consider ways in which parents of children with learning difficulties might differ from one another, before we decide where the focus of the intervention program is to be. There is, for example, a very wide range among the parents of children with learning disabilities, in respect to levels of intelligence. Similarly, they vary in respect of their sense of personal power over their circumstances, the extent to which they feel they are in control of what happens to them and their children, the extent to which they feel the plaything of fate. There is a marked variability in the parent body in respect to the personal resources available to them. In addition, the size of the family and the ordinal position of the child with difficulties are of significance in the planning of programs to involve parent participation. Family density, in particular, allied with socio-economic circumstances helps determine what degree and type of parent involvement is feasible.

I hope during this Conference that we can try to come to terms with incongruities which may exist between philosophical positions and the constraints of realities. It is true that parents are the most effective educators of their children; they play this educative role whether or not intervention programs are built upon an assumption of their participation. Most professionals would take the view that those involved in intervention programs can help parents achieve their goals more easily and more effectively. These parents do need the help of professionals to identify and develop practices which will provide an optimal environment for the developing handicapped child. But we must be wary of the danger of adding too much to their burden, in asking them always to accept the major role. Are we in danger of saying "We'll help you, we'll show you the sorts of things to do, we'll

organize the material resources you need, but you are the main person to assist your child". Are we in danger of asking too much? We must, I believe, establish ways of recognizing parental rights and responsibilities and of assisting parents to exercise these rights and responsibilities, while at the same time taking due account of the realities of their situation.

Furthermore, we need, in my judgement, to be quite honest in our prognoses about the possible achievements of intervention programs. There is need, not for unbridled idealism but for realism, born of an optimistic view of what can be achieved. If we oversell the intervention program, if we overpromise, and the inevitable failures come, or perhaps the inevitable discrepancy between promise and performance, then we merely build a burden of guilt for parents and professionals, and indeed for some of the children. We must remember in any intervention program that there are limits of achievability, dependent on the total environment in which the children live. You may find my counsel too pessimistic.

We are focussing this week on what we term 'intervention programs'. I sometimes have a passing regret that we coined this word 'intervention'. I can understand its historical emergence, but I have reservations about its contemporary usage. It seems to me that our intent is 'effective education' rather than intervention. Arising from this perspective is an emphasis on the need to ensure that the environment we arrange in a particular program is in fact responsible to the child at his particular stage in life. We emphasize the need for early intervention, and speak of critical periods. I know there is an early plasticity. It is true that there may be a critical period, socially and developmentally, for intervention, in terms of facilitating the child's interaction with his social environment and hence his self-definition. Furthermore, he may be limited in the profit he can extract from later learning opportunities, if there is failure to achieve early milestones. But in admitting this, we should not, I believe, espouse the view that intervention should be focussed exclusively on the early years.

Programs need, too, to be concerned with the totality of the child, with all his attributes. We have moved away from the categorical approach but I sometimes wonder if we have conquered the stereotypes of our earlier training and earlier experience and whether we in fact approach, for example, the Down's syndrome child to find out whether he has a sense of humour, whether he is a secure person, to find out what interests him and what excites him. Sometimes, it seems, we are dominated in our planning and practice by his single obvious characteristic. Similarly it would seem we often approach issues in educational programs for Aboriginal children, dominated unwisely by a single perspective. For example, I become disturbed when people tell me "It's so important for Aboriginal children to master the skills of literacy and numeracy that there should be greater emphasis than at present in the school program on the narrow outcomes of literacy, numeracy and oracy". I think to take this view is to ensure that the Aboriginal pupil is highly unlikely to achieve even these limited goals. He will achieve these outcomes only if the program we offer takes account of the full richness of his being: of his cultural membership, of his creativity, of his full range of personality characteristics, of his needs in all the domains of living and of learning.

I am concerned that, in some intervention programs, particularly in some of the more structured ones, there is fine-grained attention to deficits and difficulties, and an ignoring of the potential sources of personal richness of that child. Such an approach does the child less than honour, less than justice; it denies his uniqueness, his richness, his complexity. Furthermore, such an orientation is unlikely, I believe, to help him develop towards two of the goals that we would all agree are critical: a sense of control over one's environment, and a sense of being valued in one's environment.

The programs that we plan, particularly in a culturally pluralistic society such as ours, must be sensitive to the individual families and their needs, values and mores. Some will need more support than others, some will need particular support, and the values of the family and its preferred modes of interaction with others must not be violated. This approach suggests that every intervention team which numbers among its clients members of other ethnic groups must have representatives of those ethnic groups on the team; similarly with social class groups. This is particularly important. We need such people to act not so much as language interpreters as cultural interpreters between the professionals on the team from the one culture (whether it be an ethnic or a social class culture) and the parents, and to translate each to the other, that is, to facilitate effective two-way communication. Such cultural interpreters serve a further purpose: they help us to interact meaningfully with the children. We learn our patterns of interaction within a particular culture; we learn how to read each other's eyes, eyebrows and bodies as well as the words that are spoken. But different cultures learn different ways of exchanging the one message, and the handicapped child from another culture, in an intervention program may be misinterpreted and may misinterpret unless he has a cultural interpreter present. Moreover, the latter ensures him of a degree of comfort, and of security, conditions that are prerequisite for all children with effective learning.

Furthermore, as we develop programs, we need to recognize that there is a special need in *all* intervention programs to concentrate on helping the child to develop skills, attitudes and behaviours that will facilitate his developmental interaction with his peer group. If we do not do this, if we do not take explicit action towards this end, then we present the child who has already experienced areas of failure or difficulty which are likely to impair his interaction with others with yet another area of failure; perhaps even more seriously we deprive him of the positive socializing forces of his peer group. This issue has particular significance in intervention programs which seek to integrate the handicapped child into a regular classroom setting. Mere physical continuity, that is placing a pupil with a handicap in the regular classroom, may achieve little unless we ensure that we help him develop the skills that his peer group demand of him; without these he may in fact be just as isolated, if not more isolated in the regular classroom, than in the special classroom.

As we scrutinize our intervention programs, we need to look to the subtle and unsubtle, the explicit and the implicit, messages that are being transmitted to the clients through the program. These messages are contained in the conceptualization of the program, in its philosophy, in the manner in which it is funded, in the way it is developed and implemented. We need to take particular care lest these messages include either or both of the

following:

(a) To the parent: you are poor parents, that is, you are not competent in your parenting skills and behaviours and we will show you better ways or, alternatively, we will take over your role or parts thereof;

(b) To the child: you are different from others, you have some lacks, and we will remedy these deficits.

A social-psychological perspective suggests a further question about our intervention programs - are they self-enclosed? By this I mean that some programs operate within an enclosed setting; they may take place within a particular locale such as a centre or, if they operate within the home, they may be directed to a few isolated and specific aspects of child development. Thus they fail to reach out to other areas of the child's life and they fail to build and capitalize on the surrounding realities of the child's life. Where this happens, the contribution the program can make to helping the child with problems to become a more competent and more fully functioning member of his society may be quite limited.

My perspective leads me to raise two further questions, briefly, for your consideration. The first relates to teachers.

If we do use non-categorical approaches, and if we do move to creating learning settings in which children with a diversity of learning handicaps will come together and receive expert assistance in the regular or the special classrooms, does this mean that we should be asking for more skilled teachers? Do teachers require more skill and expertise to teach in such a setting, than to teach in a categorical setting? If so, are we doing something about this? If not, why not?

The second relates to the general community. However accurate the diagnosis and assessment, however good the intervention program, however positive the messages that the program implementers convey to the parents and the children, we need to remember that the program is not, or is very rarely, the centre of the child's and the family's life. It is the man in the street, the man at the corner shop, the woman in the bus who define for the handicapped child the way society sees him and values him. We must give much more serious consideration to our attempts at educating the general public about handicap and about people with handicap. A great many of the people who will interact with these children that we seek to help through intervention programs do not attend conferences; they will not necessarily read articles in the press that seek to inform and raise levels of awareness and acceptance, they will not watch specific programs on television. We need to find ways of reaching that great diversity of people who will in fact brush shoulders with the child with handicap, who will in fact stand aside from him, who will lower their eyes, in embarrassment, who will abstain from joining activities with him, because they are embarrassed, because they do not feel comfortable, because they do not really understand the limits of what he can do. How can we seriously undertake this task of educating the total Australian public?

Finally, may I make an urgent plea: that in all our intervention programs, we emphasize the need for us to look at children, whatever their special needs may be, and try to see behind the need to the individual child. I stress his individuality and his uniqueness. If we try to predict something about that child on the basis of his disability or difficulty or handicap, if we generalize about his membership of that particular group, a degree of error will be present. This follows from the fact of individual differences and also importantly from the nature of the child. He is not a passive recipient of what we offer, he is not sitting there merely receiving what we intend him to receive. He is (whatever his limitations, whatever his handicap, whatever his disability, whatever his difficulty) an active agent, seeking out and accepting what makes sense to him, what is attractive to him. If we fail to recognize this or capture this realization in our programs, we make an assault upon his individuality, upon his humanity. In these circumstances, of what avail will be our intervention programs?

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INTERVENTION FOR THE SEVERELY AND PROFOUNDLY HANDICAPPED

Robert J. Andrews

Perhaps the greatest challenge today, to those of us who work with handicapped and disadvantaged children, is the provision of appropriate intervention in the development of severely and profoundly handicapped children.

Severely and profoundly handicapped children are a group of growing importance in the field of human services. Educationally, there is a new awareness of the need to provide appropriate developmental programs for these children so that they can proceed toward skills of self-care and independence; medically, there is a growing awareness that the provision of basic health care falls far short of their needs for stimulation, therapy and training, and opportunities for growth.

Children with severe and profound handicaps are typically multiply disabled and show a combination of physical and mental aberrations. Some, however, have specific physical disabilities, for example, severe forms of cerebral palsy and spina bifida/hydrocephalus. Where severe or profound mental retardation is involved, there are a number of syndromes or conditions which are experienced by children in special schools or in hospital units. These include:

Down's syndrome
Cri-du-chat
Phenylketonuria
Hydrocephalus
Tubero sclerosis
and Microcephaly.

Profoundly handicapped children (with intelligence quotients less than 20) include those "who do not suck, swallow, chew, imitate, ambulate, speak, see, toilet themselves, respond to simple verbal commands..."

Generally accepted definitions of severe and profound mental handicap are based on an upper intelligence quotient of 40. They comprise about 60 percent of children with IQs less than 50. In a city the size of Brisbane, some 30 per year are born.

Studies of the severely and profoundly handicapped

A recent report by Dykes (1978) has presented possibly the first detailed information on severely handicapped children in Australia.

Although it is largely a collection of data based on medical classifications, it surveys 10,077 severely handicapped children under 16 years of age in New South Wales and the Australian Capital Territory and describes the disabilities "which put them in need of help in personal care or of special education and training". The children were identified from lists made available by the Department of Social Security of children whose parents were in receipt of the Handicapped Children's Allowance (8,808) and those in full-time care in a hospital, residential home or residential school (2,041); a total of 10,849. Of these children, 772 were excluded as not severely handicapped within the meaning of the Handicapped Persons' Assistance Act, after examination by a Commonwealth Medical Officer.

Of the 10,077 remaining children, 72 percent were identified as having at least two recorded disabilities, and 37 percent at least three. Mental retardation was by far the most frequently occurring condition followed by nervous system and sense organ conditions, behavioural and psychiatric disorders, conditions due to pregnancy and perinatal causes, and epilepsy. A group of conditions then follows including Down's syndrome, cerebral palsy, deafness, eye diseases and disability, and skeletal, bone and limb conditions. Nearly three-quarters of the group were handicapped by mental retardation, including Down's syndrome, and/or cerebral palsy.

The 10,077 severely handicapped children in this survey represented 2 per 1000 of the population of New South Wales and the Australian Capital Territory. Related to children aged 0 to 16 years, the prevalence rate was 6.74 per 1000.*

The Report of the Schools Commission for the Triennium 1979-81 presented figures compiled by the Special Education Advisory Group of the Commission in respect to "children in institutions" in 1977, and indicated that 2,337 residents aged 5-18 years were living in thirty-nine government and non-government mental retardation centres. Although it is not stated in the report, it would be true that most of these were severely and profoundly handicapped children in long-term residential care. It would also be true that many of the 5,842 students also identified in the 175 non-government special schools would be experiencing these handicaps, although it must be recognized that some moderately mentally handicapped children would be included in this figure, and that in some states a number of these voluntary association schools are for other major disability groups, such as those with sensory handicaps.**

Another related study, by Reynolds (1977), sought to determine the prevalence of severe mental retardation in Queensland based on records held by the state Department of Health and the Queensland Subnormal Children's Welfare Association early in the 1970s. This latter organization had begun providing

* *Based on the ABS estimates of population from the 1976 Census. The survey data is reported to have been collected between September 1975 and June 1976.*

** *Schools Commission Report for the Triennium 1979-81 (April 1978), Tables A27 and A28.*

services for mentally retarded children in Queensland soon after its founding in 1952, and by 1972 was providing services for over 2,000 persons, including the provision of special schooling for the majority of moderately and severely mentally handicapped children in the State. The Queensland Department of Health provides long-term residence for the mentally handicapped in special units in hospitals and in training centres.

Records from these two sources were used to compile a register of all school-aged children who were known to have delayed intellectual development below the IQ 50-55 level. On this basis, 1354 retarded children aged 6-16 years were identified in the State, representing a prevalence rate of 3.39 per 1,000 of the school-age population.

Intervention

In addition to those identified in such studies, an unknown number of severely and profoundly handicapped children live at home, many of whom attend day programs.

Intervention services for this group include a wide range of domiciliary and centre-based activities; provided at times by a useful mix of contributing disciplines, and having promise of meeting many of the developmental needs of handicapped children. But the true nature, level of availability, contribution and effectiveness of these activities is not clear.

There is also a large number of severely and profoundly handicapped persons in hospital-based services, provided by Health Departments. These fall into two groups:

1. those who are severely and profoundly mentally handicapped, whose medical needs are minimal, and who tend to be largely provided with care and custody in a traditional hospital-type institutional setting; and
2. those profoundly mentally handicapped children in hospital units for whom medical services are currently the primary treatment.

This latter group of profoundly handicapped children are usually located in special wards or units in long-term residential hospitals or in units attached to general or specialist hospitals. As a group, they are mostly in receipt of basic medical and self-care. Very little progress has been made in this country toward providing them with adequate therapy, stimulation, or training aimed at reducing the effects of long-term hospitalization and promoting the development of their potential for social responses and skill development. In many of these hospital situations the medical care is of a high standard, and has contributed significantly to the survival and lengthening of the life span of these profoundly multiply handicapped children. But they are an important group who require developmental programs of a type not yet provided.

But what of children and adolescents in residential hospitals? For many decades, the prevailing conditions of the handicapped in institutions was characterised by isolation, segregation, deprivation of most forms of social participation, greatly diminished citizenship, de-humanizing conditions of life, exploitation of labour, physical neglect, and often early death. Many government residential services continue to be housed in aging and inadequate buildings. A standard of multiple beds to each dormitory is common, with no provision whatsoever for wardrobes or other items of furniture, little partitioning, if any, and limited areas for movement. The children who inhabit these dormitories may not have personal day clothing or nightwear, indeed personal possessions are virtually non-existent. Any suggestion that these children have need for privacy or dignity could not be entertained in such surroundings.

The above observations are important, because true intervention with this group must take account of the total ecology of the child, as it must for all disabled children.

For example, services provided should not only take a humane approach to the needs of the handicapped but should also seek to limit their apparent differentness in respect to appearance. This differentness has a marked effect on society's judgment of the handicapped person. For instance, concern for sensory loss, crippling conditions, malformations, and obesity is as important as education programs to improve the handicapped person's level of social acceptability, and is as important as efforts to eliminate bizarre mannerisms such as self-mutilation, extreme destructiveness, and stereotyped behaviour. Efforts need to be made to minimize the stigma from all these types of differentness and disability. Visual conditions such as strabismus can be treated surgically, remedial surgery is also possible for many twisted limbs, and prostheses, such as hearing aids, can be made inconspicuous for all children.

As well as teaching the non-ambulatory person to walk we should also pay attention to his gait; the deaf should learn to speak and do so in an acceptable tone of voice; the mentally handicapped should be taught to dress and to do so in an appropriate style.

Physical comfort, respect for the person of the handicapped, and his or her environment, are too often not considered to be important, especially in institutional care. Physical comfort depends on the provision of comfortable furniture, carpeting, adequate warmth and cooling, a reasonable degree of cleanliness, and the absence of unpleasant odours and noise levels. Food should be of good quality (and at least the same quality as staff food), tasteful, balanced in dietary needs, with some individualization in its serving and presentation, if not preparation.

Respect for the person of the handicapped should be shown in such values as privacy and dignity. These demand small living units or areas, personal furniture in bedrooms to enable personal clothing and possessions, privacy in dressing, bathing and toileting. The term "mortification" is often applied to the common institutional practice of denying these rights. Practices grouped under this term include mass bathings and medical examinations without adequate privacy, imposition of hair cuts and uniform clothing,

unnecessary screening of pocket contents and other personal possessions, unnecessary regimentation, grouping some handicapped persons with others of less advanced behavioural ability and habits, and inappropriate physical control of the handicapped due, for example, to insufficient staffing.

Even in long-term care, the handicapped should have a private sphere of their own, and things that are exclusively theirs. Opportunities should exist to choose between alternatives, to make decisions within the realm of their ability. Even in institutions the handicapped should be able to exercise self-expression. At all times they should be listened to, even if they cannot express themselves in a conventional manner, be able to make choices, and be accepted by and participate in the community.

If we accept the right of a severely handicapped child, no less than other children, to a home, to privacy, to participation in the running of that home and to use it as a base from which to explore a wider and varied society, there are wide-reaching implications for patterns of residential care and for life within the homes and residentials that we provide. For a start, the segregation of handicapped people from their own localities, as now happens in residential hospitals, will no longer be justifiable. Rather, residential provision should be part of comprehensive services based on small population areas and situated within those areas. Handicapped people should have the opportunity to go on living in the locality into which they are born and in which they have their earliest social experiences.

To provide treatment or intervention for these handicapped children is one thing, to provide appropriate treatment is of greater significance. The Interim Committee of the National Hospitals and Health Services Commission recently elaborated criteria on which to base the provision of a broad range of services. These criteria are applicable to habilitation services for the handicapped, and suggest that to be truly adequate our efforts on behalf of the disabled should meet six demands. These are the demands of:

universality
accessibility
flexibility
comprehensiveness
continuity
and completeness.

Two of these are especially pertinent to our present discussion. Universality suggests that appropriate services should be available to the whole population, in all geographic areas, to *all* handicapped groups, to all age levels from birth onwards.

Flexibility suggests that the changing patterns of disease and handicaps, advances in technology and changing social structures should elicit a flexible response in services. Thus the recognition of conditions such as autism, or the growth in relative numbers of children suffering from spina bifida, dictate that appropriate services be provided. Likewise when social expectations change to the point that inadequate institutional care of the severely and profoundly handicapped is no longer acceptable provision, services should be flexible enough to meet the changing outlook.

Taken together these criteria suggest a pattern of help to the handicapped, including the profoundly handicapped, not always envisaged. Such a situation should not be seen as a "pipe-dream", or a suggestion that we should over-provide for the handicapped. What is really being suggested is that appropriate treatment requires a pattern of services that can provide highly differentiated help to the handicapped throughout their lifetime. Differentiated help means a full range of services capable of meeting the specific needs of each handicapped child or adult. Educationally this means a range of programs to meet individual needs, within a school service or otherwise, adequately backed up by support programs. This implies an extension of educational opportunities both before and after the usual age for schooling.

In residential care, it demands that we implement a small group principle in services. Living in a small group is a basic human right, and only small group living can provide the environment and individual treatment needed by each handicapped person. Large impersonal institutions are destructive of the individual. They have been rightly described as "warehousing institutions which, because of (their) atmosphere of psychological and physical deprivation, (are) wholly incapable of furnishing habilitation to the (handicapped) and (are) conducive only to the deterioration and the debilitation of the residents".

The right to appropriate treatment was defined by Judge Johnson during a Court action in Alabama, U.S.A., concerned with conditions in an institution for the mentally retarded. His definition suggested that adequate treatment revolves around three basic elements.

1. A humane physical and psychological environment.
2. Qualified staff in number sufficient to carry out the treatment plans.
3. Individualized treatment plans.

To impregnate these three elements into all of our services would go a long way to meeting the needs of the severely and profoundly handicapped. It should be noted that in addition to consideration of the environment, these points emphasise that the right to treatment cannot be met if qualified staff is not provided in sufficient numbers to give appropriate and individualised treatment, including in hospitals and institutions, and that comprehensive services are required.

But we must turn from ecological considerations to the intervention itself. When intervention is considered for these children there are many who would ask:

When should we seek to assess the needs and capabilities of severely and profoundly handicapped children?

What approaches will this require?

Would their development be accelerated by intervention in the first years of life?

What kinds of severely handicapped children will benefit from intervention?

How important is it for parents to be involved?

Although specific answers to such questions are not always possible, it is generally considered that intervention with all disabled children is a case of "the sooner the better". It should certainly begin in the first two years of life, and it should involve the parents as care-givers and participants in the intervention strategy.

Assessment is an important part of any educative or therapeutic process. It should be relevant to treatment and assist in determining developmental objectives for a child.

Systematic teaching or therapy requires the identification of realistic developmental objectives for all children, whether mildly or profoundly handicapped, and the testing of these through teaching to them. But the identification of such objectives depends on the development of appropriate tests and other procedures for use with all children; that is, tests and procedures, such as observation techniques, capable of helping us determine teaching or therapy objectives appropriate to all children, including the profoundly handicapped.

Techniques for teaching by detailed sequencing of skills, repetitive learning experiences, and continual monitoring of a child's responses are now well developed, and widely used, although often with not-so-handicapped children.

Mittler (1975) has discussed general, specific, and intervention observation at length, and makes the case that in all intervention, assessment and teaching can and should be tied. In Mittler's view, general observation is a technique employed when the observer remains at a distance from the child, noting the effects of the environment on the child, the child's own responses to various stimuli and experiences, and his interactions with others. Specific observation involves closer observation to determine in more detail the child's responses to situations, while intervention observation is an assessment technique involving the actual manipulation of the child's experiences to check out his patterns and types of responses, and then to test hypotheses about the child's reactions to specific approaches. Mittler discusses these different types of observation in the context of assessing the severely handicapped child. For instance take the example he uses of the child Sarah, which illustrates observation methods of assessment and their relationship to the establishment of teaching objectives.

> *Sarah was three and a half years old when she was first seen by a psychologist. At three months of age she had developed meningitis. As usually happens, there were other problems with Sarah which didn't seem to be related to her meningitis. She had a congenital hip dislocation and an odd-shaped head, and one wonders whether she was perhaps damaged early in life. After the diagnosis of meningitis had been made, and while she was still in hospital, she was thought to have appendicitis, so her appendix was taken out during the time she was suffering from meningitis.*
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> *When she finally went home she had regressed considerably. She couldn't babble. She couldn't interact socially, and she remained more or less motionless all day long in her cot. An*

attempt was made by the surgeons to deal with her hip, and her left leg and hips were encased in plaster for weeks. The plaster was removed when it was found that she was constantly fretting and uncomfortable, and it was decided to deal with that condition when she was older. The meningitis had left Sarah a very damaged child. The left side, and particularly the arm, had been paralysed. The hand on this side was constantly clenched tight, and rarely open or relaxed. The right hand had also suffered, and she didn't seem to be able to grasp with it. Her hands were spastic on the left and flaccid on the right, anything that was put in her right hand just limply fell out again. No one had been able to assess whether she was blind or deaf, and the clinical notes, as usual said " ? blind, ? deaf". She was under heavy medication due to constant petit-mal epilepsy. She would have several petit-mal attacks within a five-minute period.

What observations were made on her at school? The teacher set up some questions and teaching objectives:

1. *Could she grasp? Could she be taught to grasp in either hand?*
2. *Could she be taught to grasp and then shake objects?*
3. *Could she be taught gross arm movements?*
4. *Could she be taught to regard objects visually?*
5. *Was it possible to increase vocalisation?*

The program that ensued did teach her to hold objects, and to shake them on request, and it also increased her vocalisation. Behavioural evidence suggested that she was neither blind nor deaf. The other point to note in the story was that Sarah was extremely consistent in the few behaviours that she did produce. For example, whenever any kind of demand was made on her she would vocalise, usually in protest. However, she never vocalised when demands were not made on her; this pattern of behaviour was entirely consistent.

This story illustrates that learning in a profoundly handicapped child is based on achieving responses to stimuli, no matter what responses can be achieved, including simple vocalisation, movement of body parts, or facial expression.

Stainback and Stainback (1976) have suggested a number of basic considerations in seeking to intervene in this way in the development of profoundly handicapped children.

1. Relax the child before beginning a training sequence. Many profoundly handicapped children are physically rigid or tense in new situations. They can be relaxed by quiet music or talking to them, rocking, hydrotherapy or gentle massage of the limbs.

2. Use proper positioning for good body alignment, optimal visual range, and movement.

Profoundly handicapped children often spend a lot of time in bed or in cots, or placed in chairs or wheelchairs. If they are not properly positioned they will tend to develop deformities, and will not benefit from a wide range of visual stimuli otherwise possible. Movement will of course be restricted.

3. Seek the active involvement of the child, and move away from dependent care to whatever independent activity the child is capable of. If the child is unable to actively move his or her body parts, employ passive exercises which do not require overt behaviours, such as identification and location of body parts.

4. Use a high level of verbal stimulation. Repetitious language stimulation can help develop some degree of receptive and expressive language, using key words, short sentences, and visual cues through facial gestures and lip movements.

A number of attempts have already been made to devise curricula for severely and profoundly handicapped children. Sailor and Haring (1978) suggest the basic teaching areas are :

1. *Self-help skills* -

   washing, eating, toileting, dressing and hygiene.

2. *Sensory motor skills* -

   gross and fine motor skills
   sensory motor integration
   pre-vocational skill development

3. *Communication skills* -

   receptive language (speech and/or non-speech)
   expressive language (speech and/or non-speech)
   imitating, responding

4. *Social skill development* -

   behaviour
   recreation
   cooperative activity
   independent social functioning.

It is most important that we teach *skills* as individual segments in a curriculum sequence. A comprehensive program was also devised as a result of a court determination to provide developmental programs for *all* children in the state of Pennsylvania, U.S.A. (Myers, Simco & Stalma, 1973).

This curriculum arose from the establishment by force of law of a "zero reject" free public education and training program for mentally handicapped persons in that state, which demanded that no district school

authority may postpone, terminate or in any way deny the right to an educational program of any retarded child. As such it establishes that every retarded child can benefit from a program of education and training regardless of his or her level of mental ability.

This curriculum consists of the identification of teaching areas, for example to develop skills of swallowing, chewing and crawling. The authors sought to demystify the abilities and limitations of the severely and profoundly handicapped and demonstrate the viability of a worthy and appropriate education for them, rather than a mere existence.

It focusses attention on skill areas, techniques for teaching the skills, based on well established principles of learning, and gives step-by-step procedures so that teaching the severely and profoundly mentally handicapped becomes a reality. It covers similar areas to those put forward by Sailor and Haring, namely -

Sensory development

(eg. directed body movements, response to a wide range of stimulation, discrimination between types of stimulation).

Motor development

(eg. head responses to sound stimulation, head and body movement, reaching, sitting, rolling, and other motor skills).

Self-care development

(eg. self-feeding tasks, oral hygiene tasks, toilet-training and dressing).

Language readiness development

(eg. attention to speech, use of tongue, lips and teeth, imitation of sounds and response to commands).

The way ahead

Information on the true extent and nature of the population of severely and profoundly handicapped children and adolescents in Australia is not yet available. Health, education and welfare authorities provide little information to help define needs in this area.

A comprehensive survey of those in institutional or hospital care has not been undertaken in this country since the mid 1950s. However we do know that there are many hundreds of severely handicapped children in hospital and long-term residential care, and many at home, cared for by devoted and tireless families. About two thirds of these receive developmental training or experiences apart from those which nursing and residential staff are able to provide as part of daily care (Table 1) (Andrews, Elkins, Berry and Burge, 1979).

Table 1

Number of children and adolescents in Health Department long-term residential care by state and educational service

	NSW	VIC	QLD	SA	WA	TAS	NT*	ACT	AUSTRALIA
Full-time school provided	551	543	67	372	173	25		33	1764
Part-time school provided	58	93	54	3	27	2		6	243
No school program	259	347	186	-	0	56		-	848
Number of residents aged 5-18 years	868	983	307	375	200	83		39	2855
Percentage of residents aged 5-18 years *without* school programs	29.84	35.30	60.59	-		67.47		-	29.70
Percentage of residents aged 5-18 years *without full-time* school programs	36.52	44.80	78.17	0.80	13.50	69.9		15.38	38.21

* *Not applicable*

Some states, for example Western Australia, do provide high levels of intervention with the severely and profoundly handicapped. Other states are currently moving towards more appropriate programs.

Evidence suggests however that in some hospital-type settings up to 70 percent, and perhaps more, of these children and adolescents under 18 years receive no education and/or therapy, and even where therapists and teachers are provided, all too often there is a lack of essential facilities, equipment and program development to give full benefit to the handicapped group from their efforts. This latter aspect, that of appropriate programs, is a crucial lack in this field, and will be a significant deterrent to developments in the future without the allocation of suitable levels of resources and effort.

There is a need for heavy expenditure on these residential services, and a broad range of support facilities. Understaffing and lack of facilities are important problems in a number of states, including a lack of adequate facilities for provision of the basic care needs of these children. Classification of children into more normalizing age groups is long overdue in a number of institutions.

Intervention with this group of children and adolescents above all requires the careful synchronization of medical, therapy, social and educational activities. Each of these disciplinary fields in recent years has spawned the knowledge and techniques needed to make intervention a meaningful and beneficial experience to these handicapped persons. All that is required is a commitment by society through governmental instrumentalities to ensure that adequate programs are provided.

The greatest challenge today, to those of us who work with handicapped and disadvantaged children, is the provision of appropriate intervention in the development of severely and profoundly handicapped children.

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THE PARENTS' ROLE IN THE DEVELOPMENT OF LANGUAGE

Clair Isbister

I come into this educational environment rather out of my element and feeling that I may be in the position of trying to teach my grandmother to suck eggs. I hope that you will bear with me, and not think that I am trying to be an educational authority. Perhaps you will understand my interest, my temerity and at times my anger a little better if I tell you that I am also a parent of two boys who had considerable language problems and were neither diagnosed nor helped until after eight years of age, and of two other children who gained from the experience of their brothers and parents and who did get sufficient help to prevent a real problem developing. I have battled with teachers, psychologists, psychiatrists, just as so many parents of children with learning problems have, and I am now completely convinced that every child with a communication problem must be seen by a paediatrician who understands child development and who can recognize normal children. In these days of bright young academics who rise to paediatrics through the research laboratories and the universities and the teaching hospitals, it is not always easy to find a paediatrician who has explored the outside world, been into the homes of people and understands the parent role.

Fortunately, in their training, most paediatricians now are at least learning about the emotional, social, physical and mental development of the child but often not a great deal about the relationship with parents. As a paediatrician who rose through the ranks from children's hospitals, general practice, then research, and finally through the test of rearing my own children in a period when we were not spoon-fed or rigidly controlled, I think I have had a unique experience which may be useful to other people. This experience has led me into the whole area of health education and preparation for parenthood. As I worked on my first research study on breast feeding, I had an opportunity to see many hundreds of nursing couples and the relationships that developed between mother and baby. I also became aware of the importance of father's role and how much more difficult it was for mother and child if father was absent or ineffective. Most of the children with communication problems who are referred to me as a consultant paediatrician, do not necessarily present as having communication problems. They can be grouped under four main headings:

(1) *Children with behaviour difficulties at all ages* - the crying baby, the two year old having tantrums, the disobedient child, the hyperactive child, the withdrawn child, the unresponsive child, perhaps in a world of his own, the irritating naughty child.

(2) *The children with late or imperfect speech* - babbling, stammering, hesitant, but who do appear to understand.

(3) *Children retarded in other areas, such as motor and cognitive development* - often unevenly retarded and inconsistent in their understanding, having learning difficulties at school but perhaps not in all areas.

(4) *Children displaying psychosomatic reactions to their communication problem* - soiling at school, tummy pains, headache.

Any one of these children may have communication problems and it is essential that they are identified and if possible correctly diagnosed. I have seen far too many of these children who had an undiagnosed physical cause for their communication difficulty with secondary psychological problems - children who have been through the mill to psychiatrists, and psychologists. Even their parents have had their sex lives intensively investigated, a process that has sometimes lost the child one parent.

I see the role of the paediatrician as diagnostic, supportive, counselling, rather than educationally therapeutic. I frequently find myself simply in the role of collecting together in one place all the information many experts have already compiled but have not communicated to each other. I am then in the situation of explaining the different tests and their results to the parents and guiding them to someone who may be able to help. So let us have a look at a child's first learning environment, and see how he learns to communicate and relate to those around him.

The development of spoken and written language is so very complicated that I marvel that so many achieve it successfully. It involves a number of organ systems all of which have a more vital function in preservation of life than they have in communicating so they must give language second priority. This means that language is very vulnerable to emotional, social, physical and educational factors in a child's surroundings. The quality and nature of a child's speech depend largely on his respiratory system, on having enough breath passing through his larynx with muscular control of both breath and larynx for variation in sound and open sinuses for resonance. Yet the primary role of the respiratory system is to get oxygen in and carbon dioxide out. So any interference with the primary role will produce interference with the speech areas. Then he needs the muscles of mastication to speak with, good tongue control. These organs of course are much more concerned with eating and staying alive. Most important of all is the brain so sensitive and complicated controlling as it does all the senses, the hands and the nerve supply to all the muscles, yet not concerned with muscle by muscle but with total movements. Injury, infection, poisons and stress may seriously disturb the functioning of the brain. Each organ system too is gradually maturing and at each stage of development the brain and all systems must cooperate and function together so we can expect to find quite a wide range of development both in time and pattern. All this without considering the genetic aspects of communication problems. So much for the organs of structure that perform the speech and written language. Of even more concern are the factors that influence the child's awareness of his surroundings, the"receiving side" of his nervous system. His special senses, hearing, sight, smell, touch, taste, and orientation in space along with the nature of the stimulation that he receives through those senses is of critical importance. The response of the child to these stimuli and the parents'

response to the child as he makes his need known or as he tentatively responds to a parent, are all of vital importance in the development of communication. Performance is always going to depend on understanding and the quality of reception through all the senses, so that performing ability will develop later than receptive skill and will be less expert as it requires the learning of skills that involve both physical and emotional control. It is therefore particularly distressing if a child is judged and treated on performance without evaluation of the receptive mechanisms.

Let us look at the newborn baby. In the uterus he could hear the rhythmical beating of his mother's heart, he was well aware of position and touch and used to the rocking movement. Many mothers have observed their baby's response to sound and prodding while still in the uterus. Every mother knows that if she pokes the child in the uterus, it will wriggle out of the way indicating that all the senses are there. In the uterus the baby has been breathing gently, swallowing, presumably tasting amniotic fluid; smell and vision have been very restricted. But as soon as the baby is born it is apparent these senses are present. In the early alert stage after birth he will gaze at his mother's face with a puzzled look, but for the next few weeks he will mainly respond visually to movement. It will be several weeks before he can do a social smile. He will respond promptly to touch on the cheek, or the tongue and start to suck. He can be seen sniffing the milk. In fact many researchers are now saying that the pheromones known to be important in the mating of animals and in mother/baby bonding in animals may well be involved in the mother/child bonding in humans. The baby may be able to smell his own mother and mother the child. His only audible communication at this stage is crying. Brazelton has demonstrated that a baby knows his mother as early as eight weeks. He has demonstrated on films how babies of three months will respond differently to the mother, the father and to strangers. He has shown the baby's puzzlement and distress and then withdrawal if mother and father do not respond appropriately to the child's advances. As mother cradles her baby in her arms and puts him to the breast she is conveying love and security. As he grasps the nipple with his tonge and sucks vigorously he is also preparing that organ for speech. There is some quite substantial evidence that breast fed babies have fewer problems with speech. I have often become concerned about both the receptiveness and the responsiveness of the baby allergic to cow's milk, who is being artificially fed. This baby with his nose blocked often uses a sucking technique that is different from that which nature intended. He often has impaired hearing because of blocked eustachian tubes.

I saw recently a child aged about seven months who was responding very little to the parents. He had been diagnosed by an ENT specialist and an audiologist as having severe hearing impairment and requiring a hearing aid to be worn at all times. The mother of the child however felt sure that at times the child could hear her and requested a paediatric consultation. When this child was taken off cow's milk he could both breathe properly and hear and the difference in his response to his parents was quite extraordinary. From the point of view of developing speech it is extremely important that causes of hearing loss are most carefully sorted out.

If the mother refuses to breast feed her baby, if she cannot tolerate the sensation of close skin contact and has no desire to give her milk, I always fear for the child. I do not get worried about the women who start feeding and have difficulties and have to give up. But I get very worried about the women who say "no" to breast feeding right from the beginning. My concern is not so much because I regard the milk as quite irreplaceable, protecting the child from infection and minimizing allergy, but rather about the failure to convey love and the loss of enjoyment in the physical contact that go on with breast feeding. In a world where so many marriages are breaking up and we are having so many relationship problems, I think we should look very hard at the factors that improve relationships from birth and enable people to relate to each other right from birth. Certainly a satisfactory breast feeding situation is one of them. It can however, be fraught with considerable problems if it is mismanaged. There is a technique that has to be learned. A baby who is drowned every feed fights the breast and there is nothing more devastating for a mother than to be rejected by her new baby. An unsatisfactory breast feeding situation can start very considerable communication problems. The first weeks from the moment of birth to the establishment of lactation is a critical period. In this technological age when our obstetric hospitals concentrate on minimizing physical illness at the expense of forming relationships early mother/child bonding is often disturbed.

As a mother meets her baby's physical needs for food, comfort, hygiene and sleep she is establishing habits and she is guiding him to self control. He learns that food does not come instantaneously and that if he bites mother he is not going to get fed. And so we get the beginnings of learning self control. As mother talks to her baby the words do not matter, but the tone and range of sounds do. Very soon the child starts copying these sounds. By four or five months he is going to burst into tears if mother's voice is loud and scolding or if mother and father have an argument in front of the child. He has always responded to sudden loud noises from birth and in the first few months he has learned to locate the direction of sound, all very important in orientating himself in space. The child's sense of position has been acute right from birth. The startle reflex is present at birth. Any sudden change in position or a sudden sound will make the child throw his arms in the air. If the mother understands this sensitivity to sound and to change of position and handles the child gently and securely supporting his head and his back as she baths him, if she moves his limbs and lets him kick against her, and if she lets him grasp her fingers with that powerful grasp reflex that is present at birth she is going to help the child become secure in his orientation in space. Vision is vital for successful finding of himself in space. He finds the parts of his body, partly by vision, partly by touch. By eight months, he has outlined himself and realises that he is a separate individual. He has found his fingers, his nose, ears, foot and one day he realises he is a separate individual. It then becomes much more vital for the child to keep mother within sight and certainly within hearing. This can be a very disturbing stage for mothers, who suddenly find that they cannot even go to the toilet. It is terribly important for mothers to understand this developmental stage. It seems that it is easier for a baby to understand the meaning of sound and the emotions that go with them if he has one main care giver who remains in close physical contact. Most desirably this should be his mother because he becomes accustomed to her voice and can interpret

what she means. If father is in close contact from early days and talks with the child and handles him, the child becomes more secure with him. These days we recognise that it is important for the child to have two or three attachment figures not just an obsession with mother as was once considered desirable. The child who is in close contact with the father also becomes used to a different tone and a different range of sounds. I often see babies who are terrified of men, who simply will not go to them. I am sure this is often because of lack of contact with or misunderstanding of the male voice. The whole question of hearing is terribly important because if the child is not hearing properly then all the sounds he gets are going to be distorted. The sounds he tries to reproduce are going to be distorted. He is going to get inappropriate responses from the people around him as a result of the sounds he is making. If he is in the position of being able to hear the sounds, being able to reproduce sounds but not understand them and not store them in his brain, not be able to hold them long enough in memory to reproduce them, then he is in even more trouble. There is a significant group of children here who have difficulty in plain physical hearing and reproducing the sounds. There are others who have problems in the perception and meaning of the sounds.

Psychiatrists generally accept the importance of the child becoming attached to one or two people in the early months. It is part of his learning to love and to form lasting relationships. It is part of his acquiring all the methods of communication with two people. The child is more fortunate still if Granny or some other loved and caring person relates to him. But too many people, with many different voices, and different ways of handling the child, can certainly confuse him in the first couple of years. If he has to form sequential relationships with care-givers that break the bonding that he has formed with each, particularly in the first year, the situation can be quite serious. I am very concerned at what I am seeing happening, particularly to teachers, nurses, university lecturers, and to other women who get generous maternity leave payments and who go back to work very early. They not only miss so much of the early important communication with their child but also expose the child to the serious problems related to breaking relationships with a sequence of care-givers. The effect of repeated breaking of bonding may result in the child stopping talking altogether. I have seen an extreme case of this recently in a two-year-old. This particular child was being looked after by a native girl. The parents were academics working in an island situation, and the native girl looked after this child completely for the first two years. He was coming on extremely well, chattering away - chattering away in her language, with only some words of the parents' language. They they came over to Sydney and the child just stopped talking. It was a year before he said anything again - no-one could get him to say anything, and I am still very disturbed at the state this child is in.

The working mother who is not feeding her child, bathing her child and putting it down to sleep, and doing the day-to-day handlings, may find that her child has attached to another psychological mother. The child may communicate very well with that other mother, and may suffer little by the process. However, the true mother may suffer badly because she may fail to develop the right responses to her child. She misses her child's first words, she misses her child's first steps, she misses her

child's first smile and fails to develop and give the kind of responses the child has come to expect from the other care-giver.

These days the substitute parent is always temporary. The nannies who were said to have built the British Empire, were the lifelong psychological mothers of the empire builders. But that is a situation one cannot get now. It is not only the quantity of presence that is necessary, it is the quality - but it is the quality in relation to the particular situations of the developing child. With the psychiatrists firmly telling us that adolescence recapitulates infancy, I am sure that many of these mothers who have not spent much time with their children in the pre-school years will have problems with them in their adolescence.

I am also very concerned about the increasing number of women who have their radios and television sets on all day and who do not talk to their children. Studies by Yarrow (1975) on mothering, and what children require of mothers, show that the most important factor in good mothering is the closeness of the physical contact and the type of stimulation provided by the mother to her child through hearing, touch and sight.

We know now that father is very important for cognitive development, sexual identification, for the development of self-esteem, and the development of self-confidence in children. The absent and ineffective father relates to disturbance in all those areas. Children learn by imitation, by absorbing the language, the behaviour, the tastes and the habits of those who care for them, and who are with them. They absorb the attitudes, the morals and the values of the people who are caring for them.

It is the role of the paediatrician who sees any child, to make a diagnosis as well as he can. Does a physical disability exist? That is the first question we have to ask ourselves. Is this child brain-damaged? Can he see, hear and understand? Can this child breathe through his nose? Has he middle-ear infection? Is there a squint that has caused double vision? Is she short-sighted? Is there some perceptual problem? Is this child clumsy? If so, why? Is he not orientated properly in space, has he a disturbance of his nervous system? Then, when did dad learn to read? Did father have any problems at school? Are there left-handers in this family? Has this child crossed laterality? Are there emotional factors? Has mother found trouble with her mothering role? What kind of stimulation is this child getting? Has mother been depressed and not communicating with her child at all? What is this child's potential? This is a question that we usually ask at 7, 8 and 9 years. What kind of child is he anyway? Does he just need some encouragement in developing his self-esteem and motivation, or is there a real disability? Has he missed a lot of school?

Parents should always be listened to for they are usually the ones who make the first observations that all is not well with their children. Parents are the main influence in developing communication in their children and for the very young child they are probably the best teachers providing they relate well. And if they do not relate well then it is the role of the professional to help the parent to relate better and 'get through' to the child. It is important too, in these days of so many broken families to ask has this family broken? What is happening? And not only

has it broken. Have we got a reconstituted family? A reconstituted family, where father or mother marry again, does not reform a family - what it does is to introduce another lot of people that communicate and often cause conflict. It creates step-children, it does not recreate a family. It can be a good solution - do not think I am implying it is not - but it does present problems.

The management of young children with communication problems will most times involve professional help. It may involve some medication. The parents will need assistance not only to understand their child's problems and to support and guide him but also to ensure that both parent and child have access to the best consultants and facilities available.

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PARENTS AS CONTINUING SUPPORT IN SPECIAL EDUCATION

Gerald F. Ashby

The participation of parents in the education of their children is a matter of some immediate significance. From a variety of quarters and involving an even wider variety of motivations, it has become a prime virtue to advance the rights of parents to exercise a share in the educational process. For example, Grey (1976) is almost frenetic in his advocacy of "folk-family-centered-lifelong learning" which downgrades, almost to the point of insignificance, current institutional and professional input into the education process. It is Grey's thesis that teachers do not teach but rather act as a kind of resource catalyst providing "...support to parents as those parents, and those family members of all ages, educate in their homes and communities" (p.31). In this regard, Grey argues in a vein reminiscent of Illich (1971) when he posited:

> *"The very existence of obligatory schools divides any society into two realms: some time spans and processes and treatments and professions are "academic" or "pedagogic", and others are not. The power of the school thus to divide social reality has no boundaries: education becomes unworldly and the world becomes non-educational" (p.24).*

This position argues forcefully that parents, the family, and indeed the community, are in the business of educating and also that they have a primary responsibility in this regard. It represents, as Illich claimed, a breaking down of traditional institutional frameworks and contexts and their replacement by more organic settings for the conduct of education in which the allocation of responsibility rather than the redistribution of power is the major aim.

The Schools Commission (1976) has argued from mixed motives over the matter of parents' participation in education but seems principally to seek a redistribution of power on the basis of equity. It is argued that participation relates to how the decision-making process is shared between members and groups within the community. The existing arrangements are generally viewed as unsatisfactory and can only be improved by "...moves to pass progressively wider decision-making powers to the school community of teachers, parents and students" (p.13).

Important in this regard, in the Schools Commission's view, is the ability to choose between alternatives, both in terms of learning style and type of setting. Thus, an important ingredient in the Commission's thinking about parent participation is a vision of a "Bill of Rights" for parents. The parameters of such a statement are outlined by Fitzgerald and Pettit (1978).

1. *The right of parents to be clearly informed about:*

   * *the major purpose of the teaching programs offered*
   * *other objectives in order of priority*
   * *specific means used to teach particular skills*
   * *methods of assessing student progress*
   * *likely outcomes in terms of life chances*

2. *The right of parents to be consulted about:*

   * *the values - both implicit and explicit - underlying the curriculum*
   * *the nature of intended outcomes*
   * *methods of teaching envisaged.*

3. *The right of parents to have access to:*

   * *alternative programs of teaching and/or*
   * *alternative institutions with differing and explicit policies*
   * *services geared to promote successful learning and life chances*
   * *classrooms and other formal situations in which their children are taught*
   * *suitable forms of further education to enable them to undertake greater responsibilities.*

Implicit in the above is the concept of statutory rights which are public and backed by legislative force. However, such an approach appears more concerned with the governance of education, the distribution of power and authority, than with the promotion of sound working relationships between people. While it is possible to legislate for opportunities which enable participation of community in the operation of schools, it still does not follow, either that all parents will seek to avail themselves of the opportunity or that sound education of children will be the result. Indeed, it is no more possible to legislate for "good" education than it is for "good" marriages or crime-free societies. The essential elements of goodwill, co-operation, mutual respect and commitment are personal qualities which adhere to individuals.

The above two examples provided by Grey and the Schools Commission of approaches to the question of parent participation of course are not without their merits. There is no question that both views strive to express a need to ensure that quality is the hallmark of educational provision. However, each addresses itself to a conception of society which is different from present realities. Yet parents exist and schools exist now. My fundamental concern is that either the dismemberment or the politicization of schools implies profound change to all our social institutions and is not restricted to schools.

Beyond either of these examples, however, there are a range of others. In general, these further positions seek in some manner to use parents in ways that sustain the school as an enterprise but do not necessarily contribute to the child's education. Examples would include professional patronizing of parents in order to obtain additional resources or facilities for the school, and the provision of assistance in those areas and activities

which are of a basic, but trivial nature. Implicit in some of these approaches to the question of participation is the danger of tokenism. That is, there may be apparent participation but no real sharing, involvement but no necessary commitment. The issue involved with tokenism is that parents can be manipulated and indeed exploited to a point where counter-productive tendencies emerge. Being required to do something often turns people off if they do not see real benefit resulting from their activity.

Listening to a child repeating spelling, for example, can be a real drudge unless it is felt that the experience really does help the child improve in spelling. Or attending a parent meeting to be apparently talked down-to by an expert who is as much excited by the jargon of the moment as the subject matter is not particularly motivating towards future involvement in such activities. Having the modes of behaviour of "ideal" parents or the development patterns of "ideal" children thrust at one may only heighten anxiety and increase frustration.

The point that needs to be recognized is the whole issue of parents' involvement in the education of their children presents a confusing mish-mash of ideas, some contradictory but all requiring careful analysis. The question of how schools should be governed, whether by local communities or by more or less centralized authorities is not in the first instance a purely educational matter. However, what goes on in schools and how this activity affects the development and life-prospects of a child is an educational issue. The first is closely linked to a whole range of issues relevant to social organization, societal goals and means of achieving those goals. The question of whether, for example, there should be school councils or not are essentially socio-political matters. As has been suggested previously the achievement of some different manner of organizing schools will not of itself produce improved learning opportunities for children. The second matter, namely the matter of what happens to the child in the school, is very much an educational issue of major significance. If it can be shown that certain approaches to learning are on balance more effective than others then judgements of an educational kind have to be made.

Obviously, this two way break down ignores certain important issues. Clearly debate about what the child should learn while at school, that is the curriculum to be studied, is an educational, social and political issue. However, it is a moot point whether such an issue is one to be resolved at local levels or at some wider level. It is not the intention of this paper to explore this issue. Rather attention is restricted to considering the relationship between learning in school and learning out of school and the identification of some more important variables which indicate the nature of the relationship between children, parents and teachers. While such a restricted focus may appear to avoid some of the wider issues involved in parents' participation, it seems very appropriate to shift away from the arena of competing ideologies and rhetoric and come more closely to grips with such evidence as is available about the first eight years of life in order to suggest some positive strategies for improving provisions for the development of the child and in consequence, for the facilitation of education.

When focussing more particularly on the parents of children with special educational needs, the Warnock Report (1978) is particularly relevant. The report devotes considerable attention to the question and

suggests "...unless parents are seen as equal partners in the educational process the purpose of our report will be frustrated". The situation confronted by parents is dramatically evidenced by a quotation cited from the submission of one association of parents of Educationally Sub-Normal Children in the United Kingdom:

> *"Parents almost always care for a child for a larger part of each day than any professional. They endure the disturbed nights and the disruption of social life which a handicapped child brings. Their view of the child is vital to any treatment plan and their co-operation vital to its success. No attempts by teachers or other professional to communicate with parents about their children are a waste of time. It may take parents years to understand or to spare the energy to respond. Parents of an Educationally Sub-Normal child may be assailed to guilt, shame, frustration and disappointment but almost always they will want to listen to someone who is on their side in efforts to love and understand the child. It is for the professionals to persist and persist in explaining, giving practical advice and listening to the parents' story" (p.150).*

The whole thrust of the report's various recommendations are directed towards improving ways to ensure that parents can have access to three principal forms of co-operative support: information, advice and practical help. These forms of support attend very much to the particular needs of the parents, the family as a whole and the handicapped child as an individual. Specific attention is directed to the fact that needs will vary by the particular condition of the child involved but also by family circumstances and parental characteristics and temperaments.

This term partnership is used in the report to symbolize the nature of relationship between parents and professionals. The report states its position thus:

> *"It is a partnership, and ideally an equal one. For although we tend to dwell upon the dependence of many parents on professional support, we are well aware that professional help cannot be wholly effective - if at all so - unless it builds upon the parents' own understanding of their children's needs and upon the parents' capacity to be involved. Thus we see the relationship as a dialogue between parents and helpers working in partnership. We prefer this description to others such as "counselling", which may wrongly suggest a one-way flow between those who dispense and those who receive enlightenment. Professionals have their own distinctive knowledge and skills to contribute to parents' understanding of how best to help their handicapped child, but these form a part, not the whole, of what is needed. Parents can be effective partners only if professionals take notice of what they say and of how they express their needs, and treat their contribution as intrinsically important. Even where parents are unable to contribute a great deal themselves, at any rate to start with, their child's welfare will depend upon the extent to which they understand and can apply the measures recommended by professionals and can help to monitor their effects. Parents will often be able to point to an aspect that the professional has overlooked or has insufficiently considered" (p.151).*

It is obvious that the Warnock Committee viewed parent participation in the education process as essentially a means of enhancing the education of the child. A spin-off which is obviously also valued is the growth in insight of both parents and professionals. This can be contrasted with that of, say, the Schools Commission which, although sharing this viewpoint, transforms it substantially by its solid emphasis upon management-type issues.

Parenting and Child Development

It is common sense knowledge that parents, or the primary care-givers, are major sources of stimulation and learning during the initial years of life. The importance of such influence has long been recognized. However, it is only comparatively recently that nature and extent of the variables involved has begun to be charted. This is particularly the case with respect to learning in those dimensions which are ultimately of importance in later education - language, concept formation, learning styles and pre-dispositional sets (Ashby, 1967).

A study which influences much subsequent investigation was that of Hess and Shipman (1968). They argued that the communication patterns shaped by family structures influenced the language of the child and that language in turn shaped the styles of problem solving developed by the child. Specifically, this study examined the relationship between the teaching styles of mothers and the learning styles of children together with the ways children process and utilize information. The sample in this study consisted of children aged four years and their mothers and were selected from four different social status levels. The major differences between levels centred around the verbal and cognitive transactions mothers engaged in with their children. These were influenced by the levels of education and other status elements of the mothers. There were few differences between mothers in terms of their affective interactions with their children.

The significant outcome in terms of the present discussion is the extent to which the parent styles of interacting with the child manifest themselves in the child's competencies for processing information and handling cognitive demands. These styles, of course, may be more or less in harmony with the styles utilized in schools. This is a manifestation in the large scale of the internal process of achieving "match" posited by J. McVicker Hunt (1961).

A study with a much younger age-group of children was carried out by Yarrow et al (1972). In this study, the subjects were infants aged 5-6 months and their mothers or other primary care-givers. Observations were undertaken in three major areas:-

(1) The inanimate environment:

This included toys and other objects available to the child for manipulation. Ratings were made along a variety of dimensions including variety, responsiveness and complexity.

(2) The social environment:

This included the mothers' interactive and affective behaviours. Ratings were made for variety, amount and intensity of stimulation, mothers' responsiveness and amount of positive affect provided.

(3) The child's development:

This was assessed through both observation and formal assessment. A wide number of dimensions were tapped in this area including attention to mother, manipulative play, exploratory activity and problem solving. The Bayley Mental and Motor Scales were employed.

The study sought to explore the relationship between developmental competency and the two areas of environment. It was demonstrated that both the inanimate and the social environments contributed independently to status measures of competence. Specific dimension features such as the variety of objects and materials available to the child and the amount and intensity of mothers' behaviours with the child correlated highly with the development measures. Other elements were found to have more specific effects. For example, complexity of the environment did not correlate with development measures but was positively related to the child's responses to novelty and responsiveness to the environment - the greater the complexity the more positively the child responded. The ways mothers responded to the child's distress and the latter's goal directed behaviour were told to be positively correlated. (It was hypothesised that the removal of distress enabled the child to move back into exploration and involvement with the environment).

Again the significance of the environment created by the parent is shown to have both broad ranging and specific impact upon the development of the child. Clearly, flowing out of the work of Yarrow et al., the nature of the environments provided for the child by the parents is a major influence upon the shape and content of the child's development and in particular upon the approaches adopted by the child to new experiences.

A study undertaken by Clarke-Stewart (1973) examined the interaction between mothers and their first children at age approximately nine months. Both observational and measurement data were obtained over a nine month period, that is until the children were approximately eighteen months old. The protocol data gathered was extraordinarily sophisticated and extensive and it would be inappropriate to examine the design in any detail. However, the study was able to describe variables involved in what Clarke-Stewart called Optimal Maternal Care. This included maternal warmth, loving (as opposed to rejecting) behaviours, enrichment behaviours (which included capacity to encourage the child's involvement with materials) and mother's language to the child. This latter was highly related to the mother's own vocabulary and was a prime factor in accounting for the child's cognitive growth during the period nine to eighteen months. Optimal Maternal Care was found to be consistently related to child competence.

Further, Optimal Maternal Care was found to be demonstrated in the mother's capacity to structure the physical environment for the child and to respond to the child's expressions of enjoyment and distress. Such mothers

tended to be socially attentive to their child and indeed the presence of this dimension at nine months was found to be positively related to child competence at eighteen months. Further, attentive mothers tended to devote a very considerable amount of time to their child, both having the child with or close by them for a substantial part of the child's waking time and interacting or looking at the child. Put in reverse, Clarke-Stewart concluded that competent children are those who have spent considerable time interacting with their parents during at least the infant and toddler period of life.

Interaction, however, may in fact be a somewhat misleading term. The distinctive quality of the interactions experienced by competent children was that it was warm, loving, verbal, purposeful and task orientated. It is tempting also to suggest, based on the data presented by Clarke-Stewart, that interactions and the environments were structured. They were but this would also be somewhat misleading. The structure grew out of the opportunities for stimulation provided by the environment rather than being imposed upon the child in accordance with some externally derived sequence of experiences. That is the mothers of competent children appeared to sense intuitively the needs of their child and be capable of responding in a "natural" way that worked with the rhythm of the child's needs, interests and capabilities.

White and Watts (1973) and White et al (1978), building on Burton White's earlier work into competent parenting, studied two groups of children one of which was predicted to be competent at age six years and the other to be much lower in competence at the same age.

As in the other studies reported above, both observation and measurement data were collected over varying periods between twelve months to twenty-four months to thirty-six months. The distinctive aspect of these studies was the predictive component blended into the careful study of the child's environmental experiences.

White and Watts concluded that child competency was already identifiable by twenty-four months and in some dimensions, such as greater mastery of language and success in securing adult attention and assistance, by age twelve-months. Observational data confirmed that more competent children spent more time than other children interacting with their mothers and that their mothers engaged in a much greater volume of verbal behaviour and encouraged their children to seek help more frequently than the other children. Further, it was noted that this pattern of maternal behaviour increased as the child grew older whereas mothers of the children predicted as likely to be of lower competency showed very little change in behaviour as their children grew older (except for a tendency to manifest an increase in verbal discouragement of the child).

Subsequently, White et al. concluded that the first three years are critical in the development of language, problem solving styles and social-emotional behaviour and growth. It is of fundamental importance for the development of children just how the parents (or other adults) nourish and support them during the first three to four years. Such nourishment includes the kind of physical environment provided for the child and the objects, materials and opportunities within that environment. More importantly, it also includes the social and emotional environment within which the child grows up. This is chiefly provided by the mother in most

circumstances. Again the language used by the mother to communicate with the child, her capacity to attend to the child's needs and activities, to encourage the child to enter into activities and to search out help when required are of particular importance.

The foregoing studies have been referred to in some detail for a number of reasons. The antecedents of the child's development in pre-school and school lies in the transactions and environments that have been provided for the child in the early years. These have been provided in the majority of instances by parents, but particularly mothers. Although each of the studies provides complementary evidence of parental behaviours likely to promote competency at later stages, it is essential to guard against the conclusion that lower levels of competency at, say, ages two, three or indeed six or eight years are irreversible. Certainly, amelioration at later stages is likely to be more difficult than at earlier ages, but it is likely to be impossible without the enlistment of the full support and assistance of the parents. Further, in the case of children with highly supportive and competency promoting parents, the very insights, intuitions, attitudes and skills that promote the child's development in the initial years are also powerful aids to the child's subsequent learning and development. Before exploring strategies that might be deduced from such studies there are a number of further points that can be indicated.

First, Gordon and Guinagh (1974) in a longitudinal study demonstrated the impact of out-of-home, family experiences in the community. The variety of excursions, visits and trips undertaken - even where these only involved planning to go to the local supermarket or shopping centre for the weekly groceries and supplies - was positively related to child competency. This, of course, is an artefact of certain parental dispositions which are attuned to using experiences as ways of involving the child in the family processes and activities. However, because the study followed children from about three months through to about age three years, it was possible to show the impact of home teaching and learning upon the child, after being exposed to school. It was in this context that the impact of experiences beyond the immediate home proved to be a major factor in school performance.

The capacity of the home to make particular types of provisions was also highlighted by Wachs, Uzgiris and Hunt (1971) in which they showed the impact of magazines on the very young child. Access to magazines to look at, either alone or in company, to touch and to handle appears a very positive source of many experiences.

Second, Gordon and Jester (1972) studying children continuously from thirteen weeks to about four years of age were able to pinpoint the centrality of responsive conversation between child and parent. This has been represented by Gordon as "ping-pong" action, reaction, more action and so on. The interplay between child and adult was shown to have subtle and pervasive outcomes and is very close to the mother's positive interactions demonstrated by White and Watts (1973). Not only do such interactions provide for the child a basis for exploring the nature of verbal communication, its manipulative as well as informational possibilities, but also promote expectations and predictabilities concerning verbal and social interplay.

Third, and flowing from verbal language, reading has particular characteristics. A study of Guinagh and Jester (1972) is particularly indicative. Working with a sample of rural and urban parents they were able to identify marked differences in the ways parents "read" to their children. For some parents reading becomes a purely mechanical operation of reciting the words, for others it is an invitation to involve the child in a new experience which has both intellectual and affective elements. It may be that the latter are of greater long term significance than the former in establishing patterns of expectations on the part of the child towards what it will be like to be able to read. As Gordon (1976) has suggested the real beginnings of reading "...are the interpersonal, social, warm experiences..." wrapped around it. These are begun in the home, not in the school.

It is now necessary to tie this section of the paper together. Attention has been paid to the very early years and to the roles of parents in the development of competencies in their children. Not all parents are equally successful. Nor should we expect that they should be. Further, not all parents do or should operate in the same way. There is no single mode for being a successful parent. Indeed, for most parents the experience of raising one's own children, and I am no exception, is an awesome task in which the making of mistakes seems to occur with greater frequency than our successes. Parenting, at least from the parents viewpoint, again speaking very personally, is an anxiety producing and worrying matter at one level and wholly satisfying at another - the level of doing things together with one's children.

What I am trying to highlight in this somewhat emotive and turgid way is the fact that parents are both the repositories of very vital knowledge concerning their children's development and also figures of very considerable influence in shaping the course of that development. This may appear a somewhat obvious conclusion to draw. However, the invention of the discipline of pedagogy may sometimes cloud very basic and important understandings.

Burton White, who is increasingly convinced that not only is it too late at eight, but it is probably more critical to promote development in the first three years, perhaps summarizes an educational truth of some significance:

> *I would even suggest that if you are lucky enough to know a wise woman who has raised three or four or more children, and if you are on good enough terms with that person to be able to get the benefit of her advice, you will more often than not find that she will be better able to help you deal with educational concerns in the first years of your child's life than a professional can.*
>
> (White, 1975)

This quotation is not included to devalue the function of professional support for parents but rather to highlight the fact that very frequently there is a mismatch between the type and form of support that the parent requires and the type and form of information that the professional either wishes or believes the parent ought to know. This mismatch compounds and

confuses communication. Further, this mismatch is not restricted to the early years of life but may also characterize communication at later levels of learning.

Barbara Tizard, reporting a recent study of parent-teacher communication at the nursery school level in the Times Education Supplement, highlights the parameters of the problem. After examining various information-giving processes engaged in by teachers to ensure that parents "understood" the aims of nursery education and its curriculum, she concludes:

> *"It seems...that an essential part of the communication process had been left out - making the "invisible" curriculum visible - that is spelling out explicitly what the child is supposed to be learning, and by what means".*
>
> (Tizard, 1978)

This step was avoided. Teachers thought that they had provided sufficient necessary information to parents through individual conferences, group meetings, open-days, newsletter and involvement through voluntary participation in programs. At the same time, teachers also believed that things could not be rushed on the grounds that it was necessary not to push the parents too hard or fast - "it takes time to achieve an understanding", "you have to work at the relationship before they (parents) can understand you". Yet the truth is that strategies are fatally flawed if they fail to recognise that parents have already been involved in teaching their own children for a number of years, and certainly before coming into contact with either pre-schools or schools, and their teachers.

Strategies for Facilitating Child Development

At this point attention must return to the child with special educational needs. The Warnock Report, as has been indicated previously, emphasised three principal forms of assistance which parents required. These were information, advice and practical help. Over-riding each of these forms of assistance is the matter of how such assistance is made available. This raises the question of the kinds of relationships, and their contents, which are fostered by teachers and other professionals. Just as our analyses of certain research evidence has highlighted the qualitative aspects of the parent - or mother - children relationship as a stimulus to development, this is no less important at the level of home and school.

Three conclusions stand out from the data reviewed. First, that development in early childhood is promoted by parents (and other primary care-givers) who provide more than nurturant physical care. Mothers who promote competence interact with their children contingently, with the child's developmental needs and interests in mind. Such mothers arrange a physical environment that is itself full of interest, which encourages attention, manipulation and play. Exploration and curiosity are actively encouraged. Talking to and playing with the child is a feature. Furthermore, affection, warmth and responding to distress are major elements in the relationship.

Second, the qualitative elements in a parents behaviours which promote development and competence are not significantly different in character from those of other parents. Parents may love their children, provide materials, take them on visits. However, the "successful" parents do just a little more - involve themselves in the child's life and the child in their lives. Common sense tells us that quality makes a difference and some "mind-set" is involved in this. However, extending a parents "mind-set is not the same as teaching a whole new ball-game. Thus the possibility of establishing close co-operative relationships between parents and teachers is not dependent on new learning so much as recognizing the ways of pushing out and extending existing behaviours.

Third, it is obvious that a fair amount of knowledge exists concerning effective parenting. Simply sloganizing or retreating into rhetoric is not a necessary response. Knowledge exists, and in a fair degree of detail, concerning conditions which support the development of the child. However, in order to provide positive support for parents it is necessary for professionals to recognize parents' roles in promoting development and to work with parents in partnership in order to ensure a match between the learning environment, the needs of parents and the needs of children.

The most salient conclusion to be drawn from studies of parenting and child development is that confidence begets confidences, success begets success and competence grows out of the moulding of confidence and success. The self-confidence and competence of the parent like that of the teacher, is always open to threat. Thus, the actions of professionals must seek to maintain and strengthen rather than weaken the parent. This is a practical activity which depends upon the extent to which new understanding can be carefully built upon existing ones. Two illustrations may help make the point clear.

Some years ago one of my tasks was that of supervising the theses of students enrolled in post graduate studies. For the most part the students were highly experienced teachers who had been away on vigorous study for many years. The prospect of producing a formal sustained argument encompassed in say forty thousand words was daunting to almost everyone. The fact was it was not so much beyond their capabilities as outside their experience. However, close initial guidance and support together with early help in analysing the elements involved and developing series of short and intermediate goals was invariably successful in helping a match between the task and its comprehension to be achieved.

Perhaps more relevantly following a prolonged debate which stretched over several years I formed the view that if one was to assist parents in providing for their children it was possible to use everyday opportunities as a basis for generating ideas about activities. The counter view was that activities without sound knowledge about developmental processes might be self defeating - providing on short term goals but no long term directions. One outcome of the debate was a series of articles written for a local newspaper over a period of about three years.

Quite soon after, I began to get a considerable number of letters and calls each week with requests and I used these ideas for articles. One mother wrote in very early, about the difficulty she experienced in

getting her child to put his shoes on the correct feet. I developed an article on this and I must have been in a highly imaginative mood because one suggestion was that of drawing an outline of each foot and carefully putting the outline together with the appropriate shoe in a separate shoe-box and getting the child to try his foot against the outline before selecting the foot to put the shoe on. (I did recognize the intervent problems with this and I did provide some other suggestions!). However, the idea worked for the mother and she wrote and told me about it. About a year later I was in Melbourne and a former student told me how a mother at her pre-school had used and developed this idea she had obtained from a friend in Brisbane to help her child become independent in handling the left shoe/left foot; right shoe/right foot problem. Goodness knows where it has reached by now. The point is that efforts to translate problems in its practical terms, no matter how way out, do have their place.

The notion of providing programs for parents may have uses in some instances but more frequently the provision of some very basic and concrete possibilities is generally more useful and less threatening. Thus if one seeks to enlist the parents' support it is necessary to attempt two things: clearly identify the tasks to be performed and ensure that the parent can seek consequences. However in doing this it is also important not to under-estimate the insight of parents, to avoid the "talking-down" and "putting-down" syndrome.

It may appear that little particular attention has been directed to parents of children with special educational needs. Not so, these parents know that their children have needs but they are parents first and foremost. Generally they also know that they can help their children. Therefore it is the kind of ways that the needs are met which has to be carefully worked through. The problem is very much the general problem - although the rewards may be both different and more difficult to obtain.

The strategies I am promoting are simple. To be effective it is necessary to treat parents as equals, partners as Warnock suggests. Further, equality implies caring for the feelings and respecting the concerns and capabilities of the other. Finally, partnership suggests tackling tasks together which means accommodating the experience and knowledge of parents into the scheme of things.

Brian Jackson, an English educationist deeply committed to parent involvement, summed up the essential ingredient involved in the child's progress in talk on the A.B.C. when he said:

> *"And the answer the researcher has come up with is this - it isn't the fact that the child is taught in a lovely new school building although some people think that's so. It isn't the fact he's got all those audio-visual aids... No. What turns out turns out to be most important of all in the child's achievement is the attitude that his parents take".*
>
> (Cited in Poulton, 1979)

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THE CHANCE AND QUALITY OF SURVIVAL OF LOW BIRTH WEIGHT INFANTS (LBW)

David I. Tudehope

Prematurity or preterm birth is defined by the World Health Organization as less than 37 completed weeks gestation (but greater than 20 weeks) and *Low Birth Weight* (LBW) is less than 2.5 kg. The incidence of both prematurity and LBW in Queensland is 7 percent but not of course the same 7 percent. Some premature babies weigh more than 2.5 kg and some full term babies weigh less than 2.5 kg. Although the outlook for the premature infant has improved markedly with perinatal intensive care, prematurity is still associated with two-thirds of neonatal deaths and two-thirds of infants with residual neurological handicap.

The usual coarse yardstick we use to evaluate the quality of perinatal care is the *Perinatal Mortality Rate* (PNM). PNM is defined as the sum of all still births and neonatal deaths in the first 28 days of life (both greater than 400 g or less than 20 weeks gestation) per one thousand births (both live and still). Australia currently ranks about tenth in the world but is still a long way behind the Scandinavian countries, Holland and Bulgaria. Over the last two decades, the perinatal mortality rate in Australia has declined from 30 to 19/1000 births. The major factor in this decline has been the increased survival of the LBW infant. This has been due to improvement in both medical and nursing care of these infants and the introduction of modern technology.

The following have been major factors in increasing the chance of survival of LBW infants.

Improved obstetric care with a reduction in birth trauma, better resuscitation at birth, prevention of cold injury with servo-controlled incubators, prevention of symptomatic hypoglycaemia, prevention of hypoxia and severe acidosis with mechanical ventilation, phototherapy and exchange transfusion to prevent bilirubin encephalopathy, early detection and treatment of apnoea with electronic monitoring of heart rate and respirations, total parenteral nutrition to prevent postnatal malnutrition and safer neonatal transport to intensive care nurseries.

For example, survival rates at the Mater Mothers' Hospital in 1978 were:

(1) 750-1000 g - 53%
(2) 1001-1500 g - 84%
(3) 1501-2000 g - 92%
(4) 2001-2500 g - 97%

There is no doubt that the chance forsurvival of the LBW infant has increased markedly over the last two decades. But what of the quality of the survival? Follow-up studies on LBW infants reported in the 1950s were

uniformly disappointing (Drillien, Lubchenco, et al 1972) but as early as the 1960s an improvement in the quality of survival was reported (Fitzhardinge). It was only 15 years ago that Drillien reported 59 percent of survivors less than 1250 g had IQ less than 90 and 28 percent had cerebral palsy. Similarly, Lubchenco reported 43 percent and 32 percent respectively with 16 percent having severe retrolental fibroplasia. However, in the United States of America and the United Kingdom these bad results acted as incentive to improve the quality of survival and a great deal of money was invested in this endeavour. We, in Australia, are now reaping the benefit of this research and technology and in 1979 the follow-up data of infants less than 1500 g presents a totally different picture.

A factor to be considered is the enormous cost of perinatal intensive care. In the United States of America it costs about three to four million dollars to run a nursery such as the Neonatal Clinic at the Mater Mothers' Hospital and it has been estimated that the cost of keeping an infant of birth weight less than 1000 g alive, who turns out to be normal, is about $85,000.

In the late 1950s and 1960s, it became apparent that the problems of these very low LBW infants were not merely physiological due to immaturity of organ systems but also psychological due to prolonged maternal-infant separation and failure of bonding.

A survey of 1400 nurseries in the United States of America in 1970 revealed that only 30 percent allowed mothers to enter nurseries and that only 40 percent of these permitted mothers to touch their babies. It was not until 1974 that intensive care nurseries opened their doors to parents. This change in thinking was largely stimulated by the work of Klaus, Kennell, Brazelton, Bowlby and others. When failure of bonding occurs, there is rejection or non-acceptance of the child.

Problems in the child include :

(1) *Child abuse* : 30 percent of battered children are premature but the incidence of prematurity is 7 percent overall.

(2) *Idiopathic failure to thrive* : Neglect and deprivation.

(3) *Cot death* : 13/1000 for prematures versus 1.3/1000 for full term.

(4) *Temper tantrums/colic/feeding problems/sleeplessness/vomiting.*

(5) *Inadequate personality* : Poor interpersonal skills.

Parental problems include :

(1) Hesitant, clumsy handling of baby.

(2) Anxiety states.

(3) Mother states "baby belongs to the hospital or to nursing staff".

(4) Feelings of inadequacy/disappointment/failure/deprivation/anger.

(5) Baby does not bond to her.

A great deal is now done to prevent these problems arising. The follow-up care of high risk infants should be a continuum with their intensive care and is at least as important. However, currently it is done less well. The purposes of a follow-up growth and development clinic for high risk infants are :

(i) Early diagnosis of problems leads to early treatment and a better long term prognosis.

(ii) To evaluate long term prognosis of a high risk population of infants. Whilst gross handicap is often evident at a few months of age, moderate or minor defects such as specific learning difficulties, behavioural problems, emotional problems may not be evident until the child reaches school age.

(iii) To evaluate which perinatal factors have an adverse effect on long term outcome.

(iv) To answer the question : "how should high risk infants be followed up?" e.g. which of the battery of neurological and development tests are worthwhile.

(v) To evaluate a cost benefit analysis for perinatal intensive care.

(vi) To evaluate the beneficial or detrimental effects of specific forms of therapy and management during the neonatal period.

The Growth and Development Clinic at the Mater Public Hospitals commenced in April 1978 and consists of the following:

All high risk infants (whether public or private) in the following groups are followed up -

Less than 1500 g birth weight
Mechanical ventilation
Convulsions, meningitis, intracranial haemorrhage
Severe birth asphyxia (still birth, no respirations for 20 mins)
Severe apnoea

Infants are seen at 1, 4, 8, 12, 18, 24, 36, 48, 60 and 72 months after the expected date of delivery. The clinic is multidisciplinary with the following personnel:

(1) Intensive Care Nursery Sister
(2) Neonatalogist
(3) Occupational therapist
(4) Physiotherapist
(5) Developmental psychologist
(6) Opthalmologist
(7) Audiologist

When evaluating the attendance at the clinic, it must be remembered that half the babies were born outside Brisbane.

For adequate follow-up the affliction rate should not exceed 20 percent from the initial total population. Duration of follow-up is uncertain but by two years most major neurological handicaps are detected. However, learning difficulties, behavioural disturbances and low IQ are often not detected. Long term follow-up (5-8 years) suffers because neonatal care is evolving so rapidly that management seven years ago bears little resemblance to current practice.

The Influence of Perinatal Intensive Care on Specific Handicapping Conditions

Cerebral Palsy : The most comprehensive perinatal data bank relating to cerebral palsy (CP) is available in Western Australia for babies born between 1956-75. The total incidence of CP rose from 2.5/1000 in 1956-70 to 4/1000 in 1966-70 but has fallen to 1.5/1000 in 1970-75 with perinatal intensive care. All types of CP declined but spastic diplegia less markedly. Although the overall incidence of CP in surviving prematures continues to fall, the relative contribution of prematurity to all cases of CP is increasing. The obstetric factors significantly associated with 207 cases of CP were:

(i) Breech presentation
(ii) Emergency caesarean section
(iii) Failed obstetric procedure
(iv) Foetal distress

The neonatal factors included:

(i) Birth weight
(ii) Gestational age
(iii) S.G.A.
(iv) Cyanosis
(v) Need for resuscitation
(vi) Time to establish respiration
(vii) Apgar scores
(viii) Birth trauma
(ix) RDS etc.

Undoubtedly modern day perinatal intensive care has increased the chance of survival of LBW infants free from cerebral palsy, mental retardation, epilepsy, micro- or hydrocephaly, but it has created a new type of disease. This disease is iatrogenic and includes:

a) Oxygen toxicity : Respiratory cripples from bronchopulmonary dysplasia
Blindness from retrolental fibroplasia.
b) Hearing deficits from antibiotics and incubator noise.
c) Digit damage, nerve palsies, nasal deformities, oral deformities and bowel disturbance from catheters, tubes and needles.
d) Cardiac failure from a patent ductus arteriosus.

Today a small number of babies survive in a handicapped way. However, this is more than offset by the large number of handicapped premature babies who formerly survived without intensive care, but now with intensive care survive as normal citizens.

The specific problems of the very low birth weight (VLBW) and average incidence figures from a large number of studies are listed in medical and neurological groups below:

MEDICAL PROBLEMS at follow-up of VLBW infants, with incidence figures averaged from many studies are :

Pulmonary : Bronchiolitis/pneumonia
- 10% in survivors of RDS
- 25% in survivors of mechanical ventilation
- 60% in survivors of BPD

Cot death - (13/1000 versus 3/1000 for full term).

Cardiac : PDA - 45% of VLBW with RDS but majority close by EDC.

Ocular : Retrolental fibroplasia 1-2%, Myopia and Strabismus are common but no incidence figures available.

H [redacted] *ural* hearing loss 1-2%.

Surgical : Inguinal and umbilical herniae and undescended testes are all common.

NEUROLOGICAL PROBLEMS AT FOLLOW UP IN VLBW INFANTS

Major Neurological Handicaps : Overall incidence 7%.

Spastic diplegia - 3.5%
Hypotonia, hemiplegia, quadriplegia - 2%
Hydrocephalus - 4%
Microcephalus - 0.5%

Minor Neurological Handicaps :

Ataxia, incoordination - 3.5%
Specific learning difficulties
Minimal cerebral dysfunction

IQ - Mean global IQ ranges from 90-97 in reported series.

Follow-up data must be interpreted with knowledge of initial population number, biographical data and percentage mortality, i.e. an aggressive attitude will result in lower mortality, perhaps a higher percentage of morbidity amongst survivors but definitely a higher absolute number of normal babies as an end result.

The following perinatal factors may influence subsequent sensory-motor development in LBW babies:

Perinatal asphyxia
Perinatal malnutrition
Respiratory distress syndrome
Apnoea
Hypoglycaemia
Hyperbilirubinaemia
Convulsions
Intracranial haemorrhage
Alcohol, nicotine, heroin use

In the premature infant who is subsequently mentally retarded, it may be difficult to ascertain which of the above factors damaged the brain.

Perinatal asphyxia : The management of perinatal asphyxia is undoubtedly the single most important subject in paediatrics today. The long term sequelae of birth asphyxia include: mental retardation; spasticity; choreoathetosis; learning difficulties; behavioural problems, epilepsy.

The pathological processes of hypoxic-ischaemic encephalopathy are now well understood:

Long Term Sequelae of
Hypoxic-ischaemic Encephalopathy

	Full Term		Premature
		PATHOLOGY	
Hypoxia	Cortical Necrosis		Status Marmoratus
		CLINICALLY	
	Mental Retardation, Seizures, Spasticity, Ataxia		Choreoathetosis, Mental Retardation
		PATHOLOGY	
Ischaemia	Watershed Infarcts		Periventricular Leucomalacia
		CLINICALLY	
	Motor Deficits Intellectual Deficits		Spastic Diplegia

Malnutrition : The foetus who is subjected to malnutrition in utero and is further subjected to under-nutrition in the first few months of life, may sustain irreversible brain dysfunction as well as long term growth failure.

RDS., Apnoea etc. : Babies with respiratory difficulties often develop hypoxia and acidosis and are therefore subjected to the same problems as those with perinatal asphyxia.

Hypoglycaemia : Babies who sustained symptomatic hypoglycaemia have residual defects in 35 percent. Sequelae include mental retardation, convulsions, cataracts, optic atrophy and myopia.

Jaundice : Most babies with kernicterus (bilirubin encephalopathy) die but the survivors often develop choreoathetosis, mental retardation, deafness and paralysis of upward gaze.

Alcohol, nicotine and heroin are all potent teratogens. Excess alcohol ingested during the first trimester may have a devastating effect on the foetus. Physical features of the foetal alcohol syndrome include:

(i) Growth failure

(ii) facial abnormalities

(iii) cardiac defects

(iv) joint and limb deformities

(v) delayed development.

The purpose of this paper has been to explain some of the handicapping conditions of childhood and to outline the role intensive care neonatology is playing in predominantly preventing some of these handicaps.

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THE DEVELOPMENT OF HIGH RISK AND PRE-TERM INFANTS

Yvonne R. Burns

Introduction

The promotion of optimum physical and mental health for all children means that early diagnosis and effective treatment of conditions likely to handicap the development of mind, body or personality must be ensured. Therefore, there is a need to discover the cause and means of preventing such handicapping conditions (Sheridan, 1974).

Intensive care for the pre-term, low birth weight and 'at risk' infant is a field in which considerable advances have been made in the last decade. However, although the highly sophisticated technological equipment and specialized medical skills undoubtedly save more lives, there is a need to know as much as possible about the quality of life of the survivors in terms of the child's later developmental potential.

Although as early as 1861 Little (cited Brown, 1976) recorded a direct connection between respiratory problems at birth and later physical and mental impairment, the need for continued evaluation is still present as advances in care procedures and facilities are constantly changing.

Studies in the past have tended to concentrate on the outcome in terms of incidence of moderate to severe mental and physical handicapping conditions. However, the importance of the total functional, emotional, psychological and physical abilities of the child is now recognised, and an apparent minimal dysfunction can severely limit the development of the full potential of an individual child. For this reason therefore, there is a need for longitudinal studies of the qualitative aspects of development of high risk infants throughout the formative months and years, in order to recognise problems early and instigate necessary corrective procedures for the child. There is also a need to provide the means whereby causative factors can be isolated, ensuring where possible future preventive management.

The complexity of both structure and function of the developing infant and child with numerous simultaneous interrelated progressions and normal variations means that an assessment procedure must be a dynamic process. This involves both objective evaluation of interaction processes as well as the administration of a variety of specific tests while the assessment must be based on a detailed knowledge of overall infant development and developmental neurology.

Past and Recent Studies

A study of the literature reveals that in the 1960s the long term outcome of low birth weight and pre-term infants was not good. A

retrospective study of low birth weight infants by Drillien (1964) showed a high incidence of mental retardation and neurological impairment. Recognition of this ultimately led to the discovery of the relationship between neonatal hypoglycaemia and the later development of mental problems and physical handicaps.

At the Newborn and Premature Centre in Colorado, Lubencho and others followed 254 surviving prematurely born children, for up to 10 years (Lubencho et al 1972, (i), (ii)). The highest incidence of moderate to severe handicap (85%) occurred in the smallest infants (<1500 grams) and those of shortest gestation (<33 weeks), but there was also a 20% incidence of handicap in those over 1500 grams and more than 33 weeks. Similar findings were reported by Fitzhardinge and Ramsay (1973) who studied the long term outcome of small for date and pre-term infants born in the 1960s. Meanwhile, Dann (1964) considered only visual defects in infants of low birth weight and reported an incidence of 59% having visual impairments, while Polani (1958) reported that 30% of children with cerebral palsy had a history of prematurity. The summary of the collaborative study undertaken by Churchill, Masland and his team (1974) in which the aetiology of Cerebral Palsy was investigated, reported an indication that the impairment of spastic diplegia resulted from the pre-term birth and that short gestation, not low birth weight was the dominant factor. An incidence of 5%-10% spastic diplegia of surviving pre-term infants had been reported previously by Churchill (1958) and later by Bandera and Churchill (1961).

A relationship between prematurity and learning difficulties at school age was highlighted by de Hirsch, Langford and Jansky (1965), who demonstrated that prematurely born infants had poor language, and difficulty in scholastic tasks requiring a high degree of differentiation and integration. These children also had a tendency to show more primitive central nervous system patterning and a relatively lower level of neurological integration. A high incidence of learning difficulties, speech disorders and motor incoordination has also been reported by Fitzhardinge (1976), Stewart (1977) and Gubbay (1977).

More recent studies reveal an improving outlook which has been due, at least partially, to the recognition of some of the previous causative factors leading to the implementation of present preventive measures. However, direct comparison of results is difficult. In many of the earlier studies low birth weight, small for date, and short gestation infants were considered together and there was no separation of the three groups. The more recent studies now tend to report on the outcome of small, specific, very high risk groups of infants such as those less than 1,000 grams, those less than 32 weeks gestation, or those who required mechanical ventilation for severe Respiratory Distress Syndrome or following perinatal asphyxia.

In a review of long term follow-up of low birth weight infants Fitzhardinge (1976) reported that since 1970 there has been a decrease in the incidence of spastic diplegia, that infants with cerebral palsy are more likely to be multiply handicapped, and that the occurrence of specific learning difficulties and speech disorders is more likely to be found. Fitzhardinge pointed out that as a result of the use of intensive care neonatal nurseries, there has been both an increase in normal and near

normal survivors, as well as an increase in mildly and severely handicapped infants.

This opinion was also supported by Stewart (1977) who reported on a 10 year follow-up study of infants of birth weight between 500 and 1,500 grams. Of the 32% of the infants who survived and who were followed for periods ranging from 3 to 7 years, 78% had no detectable handicap, 7% were physically handicapped and 15% had minor handicaps. Stewart (1977) cited a study by Fitzhardinge and Stevens who reported that 1% of infants of birth weight 1,300 - 2,500 grams had a definite handicap but 25% had problems at school. A comprehensive two year follow-up by Pape and colleagues (Pape et al, 1978) of infants born with a weight of less than 1,000 grams in 1974, indicated a total incidence of 30% of children with a handicap and 70% who were normal. Although these and other studies (Kamper, 1978; Saint Anne Dargassie, 1977) still indicate a variable but fairly high incidence of major handicap or problems of learning and co-ordination, these later results do compare favourably with the 60%-85% incidence of handicap in similar groups of infants born in the late 1960s.

Growth and Developmental Follow-up Studies

High Risk Infants : Studies undertaken to date have emphasized the need for developmental follow-up of high risk infants. To this end, a growth and development clinic has been established at the Mater Hospital in Brisbane, to provide both a comprehensive assessment and a follow-up of such infants.

During the 12 months period, April 1978 to March 1979, 139 high risk infants have been assessed in this clinic. These include infants with a birth weight of less than 1,500 grams, gestation less than 32 weeks, those who have required mechanical ventilation, and other infants at risk due to birth asphyxia, known intracranial haemorrhage or neonatal fits. The infants who were assessed at one, four, eight, twelve, eighteen and twenty-four months are seen by a multidisciplinary paediatric team to ensure a comprehensive medical, neurological, psychological and social/emotional evaluation. Opthalmological and auditory screening is also carried out at the appropriate assessments.

Some preliminary results have indicated that, of the 139 infants who fulfilled the selection criteria for follow-up, 113 (81%) have attended. However, it is important to note that almost 50% of the total number of infants had been transferred from the country to the special care nursery, and since discharge, 5% of families have moved interstate or overseas.

Although many of the infants fulfilled more than one of the selection criteria, 49.5% of those who have attended for follow-up were mechanically ventilated, and 38% had a birth weight of less than 1,500 grams.

A review of the first 12 months of the follow-up study of the 38% (44) of infants with a birth weight less than 1,500 grams (as shown in Table 1) indicates that moderate to severe respiratory problems were present in 4%, while mild problems were found in 7% of the infants. Mild neuro-developmental deviations were found in 22% but previous studies (Kraybill, 1974) have indicated that, in 60% of these infants, the signs gradually disappear. However, definite mild to severe mental and physical handicaps have been found in 11% of these low birth weight infants, and 22% presented with varying degrees of convergent strabismus. It is too early to evaluate if any infants have a permanent visual handicap from retrolental fibroplasia.

Table 1

Outcome of Infants with Birth Weight 700 - 1490 Grams

Area of Involvement	Percentage of apparently normal and impaired infants over a 12 month period (n = 44)		
	Apparently Normal	Mild → Moderate Problem	Moderate → Severe Problem
Respiratory	89	7	4
Cardiac	91	7	2
*Ocular	78	20	2
Neurological	89	** 4	7
Developmental Abilities	84	9	7

* *Does not include visual acuity (too young to test).*

** *Does not include 22% with mild neuro-developmental deviations.*

These preliminary results only present a general indication of the types of problems which are appearing. However, as the age range of the infants is from 1 to 18 months, it is too early for any conclusive predictions to be made.

A Study of the Development of Pre-term Infants : In 1975 a longitudinal study of the neurological, sensory, motor, general development and overall outcome of pre-term born infants was initiated through the Department of Physiotherapy, University of Queensland. Infants born at or less than 35 weeks gestation were selected for study for several reasons. Infants of short gestation are more vulnerable to damage due to the immaturity of all basic life sustaining systems. A high incidence of neurological handicaps correlating with short gestation rather than low birth weight had been reported (Churchill, 1974). As there is a period of rapid neural growth just prior to and following term (normal birth age),

this was considered to be an important factor. Despite the introduction of special neonatal intensive care and mechanical ventilation into a Brisbane hospital in 1972, there was very little known of the subsequent development of the surviving infants.

In the two major maternity hospitals in Brisbane, 135 infants met the criteria for selection and were assessed prior to discharge from the unit. Further assessments of each child have been carried out at the ages of 1, 4, 8, 12, 18, 33 and 48 months. When the children reach 5 years of age, a comparative study of the pre-term group with those born at full-term in the same year, will be carried out. Although the results of the first 12 months have been analysed, the complete significance of these early results cannot be fully appreciated until the longitudinal and comparative studies have been completed (Burns, 1977).

Two assessment formats have been used in this study, namely "The Griffiths Abilities of Children" scale (Griffiths, 1970), and a neurologically based sensory and motor developmental evaluation which has been designed to record both qualitative and quantitative aspects of response. General groupings of tests are shown in Figure 1.

Although abnormal development was recognised in one infant before discharge, evaluation during the first 12 months isolated definite abnormality in a further six infants (total 6%). Confirmed mortality, morbidity and developmental deviation at 12 months of age is indicated in Table 2.

Table 2

Mortality and Developmental Deviation in First 12 Months

	Percentage
Confirmed deceased	2.5
Developmental Deviation	
Cerebral Palsy & Hydrocephalus	5.7
More than 1 month overall developmental delay at 12 months	11.5
Inconsistent sensory/motor progress during first 12 months	16.4
Total	33.6

Follow-up of 113 (84%) of the pre-term infants at the age of 33 months (adjusted age) has indicated that 7% have a marked delay in the use of speech. Of the 25% of the children who have some signs of incoordination, postural or motor immaturity, 5% are receiving treatment for

NEUROLOGICAL SENSORY AND MOTOR ASSESSMENT

SENSORY-BEHAVIOURAL ITEMS

BASIC BEHAVIOURAL STATE; ALERTNESS; INTEREST: CUDDLINESS; DEFENSIVENESS

SENSORY-MOTOR ITEMS

TACTILE; PROPRIOCEPTIVE; VESTIBULAR; OCULAR; AUDITORY

MORE ITEMS

GENERAL POSTURES; MOVEMENT; MOTOR REFLEXES; MAJOR MILESTONES

POSTURE & ORIENTATION

PLACING REACTIONS; RIGHTING REACTIONS: PARACHUTE AND PROTECTIVE REACTIONS: EQUILIBRIUM REACTIONS

FUNCTIONAL PERFORMANCE

HAND PREFERENCE; CROSSING BODY MIDLINE; AGE APPROPRIATE ACTIVITIES

NEUROLOGICAL

NEUROLOGICAL TESTS FOR TONE AND ABNORMAL RESPONSE

FIGURE 1. OUTLINE OF AREAS ASSESSED SHOWING GENERAL GROUPING OF TEST ITEMS.

their problems. A further 7% have definite neurological handicaps requiring comprehensive treatment, and 8% have medical conditions requiring long-term management.

The analysis of the first 12 months of development revealed that when the age of the infants was adjusted for the number of weeks pre-term, their overall development correlated significantly with the expected development of full-term infants. However, there were some variations in regard to the type and quality of some responses, the significance of which is currently being studied. As indicated in Table 3, at both 18 and 33 months the general overall performance of the age-adjusted infants compared favourably with the expected Griffiths developmental age.

Table 3

Chronological, Adjusted and Griffiths Ability Age of infants born pre-term

	Mean age in months	
	n = 120	n = 110
Chronological age	20.1	35.25
*Adjusted age	18.3	33.2
Griffiths ability age	19.6	34.9

** Age adjusted for number of weeks born pre-term.*

Conclusion

Comprehensive longitudinal studies provide the means whereby any correlation between early developmental factors and later problems of function and/or learning can be investigated. If any correlations do exist, they have important implications for the future early recognition of alerting signs which may provide the opportunity for further preventative procedures and earlier intervention.

However, although there is a growing but as yet incomplete bank of knowledge regarding the development of normal full-term born infants, there is very little known about the variations likely to be experienced by infants born 8 to 14 weeks too soon. With the rapid expansion of intensive care neonatal units throughout the world and a proportional increase in the number of very small pre-term infants surviving, there is a great need for detailed information regarding their expected development. Without this knowledge, realistic evaluation of the developmental progress of these children will not be ensured. It is hoped that the results of the two studies described here will provide some of the information necessary for better understanding in this area.

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NON-COGNITIVE FACTORS IN CHILDREN'S LEARNING

L. Gow *J. Ward*

The title of the present conference attests to the fact that the period of early childhood is crucial for the prevention or remediation of failure in later education. Here at least three distinct problem areas can be identified. The first relates to *entry into the formal school system*: the child's adjustment, social competence and level of skills prerequisite to academic learning. The second refers to *maintenance* within the system; i.e. ensuring that the child has opportunities for achieving an acceptable rate of educational progress and the personal satisfaction obtained through experiencing success. The third, that of *remediation per se*, is a very large one and refers to the measures to be adopted when a child is experiencing psychoeducational difficulties and needs some form of extra support if it is to avoid becoming grossly retarded in the educational sense.

In all these areas there is probably a distinction to be drawn between the problems faced by the developmentally disabled child and the child of relatively normal intelligence and background. However, the fundamental problem common to all these areas is undoubtedly that of optimalising learning in the sense of making the best use of an individual child's learning potential and the available educational technology. In attempting to produce this educational effect, there can be no doubt that early childhood educators face many difficulties. In the period between three and eight years children experience rapid, often sporadic, changes in the patterns of their intellectual and physical growth. They vary among themselves and also within themselves to a very marked degree, as can be seen in any observation of a preschool or infant class of children of roughly the same age. In view of such obvious differences they are likely to require an individualised approach to learning and much of recent early childhood education has been predicated upon this need, allowing the child freedom to explore its educational environment and evolve its own approach to learning through self-discovery. However, the approach is not without its problems and it can be claimed, in particular for the child at educational risk, that early childhood educationalists have not yet achieved the balance between individual, self-directed learning and the firm structure of programming required to guarantee the acquisition of basic academic skills.

In approaching the problem of individualising instruction contemporary educational psychology has traditionally been concerned with three areas of enquiry: Individual variation in psychological processes, qualitative changes in children's development and learning principles which generate an instructional technology. Until quite recently the field has to a large extent been dominated by the first of these: differential psychology, and a very considerable volume of work of this type is still in progress. However, it is frequently observed that much of this research effort has not succeeded in producing data which can be readily applied in educational

settings. There is some substance to this criticism and the demand is therefore growing for researchers to study individual characteristics which are potentially important for educational programming. The following will therefore focus upon the problem area of individual learning characteristics.

Individual Learning Characteristics

In addition to relevant intellectual and educational data teachers have obvious needs for other sources of information which characterise the child as a total individual in terms of its personality, level of motivation, social and personal adjustment, etc. To provide effective instructional environments, knowledge is required of such areas as how the child sees itself, its basic strategies for obtaining information and solving problems and the ways in which its individual characteristics are integrated into its personality.

From the beginning it has to be conceded that many problems of measurement are involved in a study of such variables. However, it is probable that for learning in early childhood, personality and emotional factors may be more important than the purely cognitive. For during this period the child rapidly acquires those personal and social skills necessary for the development of competence, in addition to resolving some of its problems of identity in the context of family relationships. The world of the young child is therefore predominantly emotional although, unfortunately, this has often been forgotten, particularly in many studies into the causes of academic failure where cognitive factors appear to have been of sole interest.

This is unfortunate for there is mounting evidence to suggest for instance that there are important associations between children's behavioural patterns in early childhood and their susceptibility to developing behavioural problems and poor academic performance in later years (Rutter, 1975; Segal, 1978). For example, Stott (1978) pointed out that temperamental characteristics have been shown to be important with respect to both reading difficulties and delinquency and several studies have indicated that children who show restlessness, poor concentration, and impulsiveness are more likely to have difficulties than other children in learning to read. The same characteristics, especially impulsiveness combined with aggressiveness, have been linked with delinquency (Rutter, 1975). Rutter has also noted in this context that, since these attributes are evident during the preschool years, it seems that in many cases they are not a response to reading failure but rather a contributory cause.

Despite this evidence it has to be conceded that the educational relevance of non-cognitive factors has recently been disputed, the firm view being taken that time would be better spent on a pragmatic approach to individualizing instruction. Here the child is defined not so much in terms of its personal characteristics but in terms of its response to instruction. We take the view, however, that the variables which describe the subject's general personality are of crucial and continuing importance: that, in some sense or other, educationalists will always be concerned with matching individual characteristics with optimal instructional strategies; that the search for basic dimensions of personality and cognitive style is of such obvious relevance that it has to continue. The ultimate test of the usefulness

of this work will, of course, lie in the results obtained through practical application, and in preparing this paper we have attempted to keep this in mind. Our aims therefore, are:

1. *To point out that the child's whole personality should be considered in an examination of its learning characteristics, not merely its cognitive attributes;*

2. *To examine areas of personality and adjustment which are important in such a consideration; and to comment briefly upon their use in educational settings;*

3. *To discuss technical issues in programming arising from such use.*

1. *The need to consider the whole personality of the child*

A considerable body of evidence indicates that the prediction of educational performance and other forms of complex intellectual activity involves domains of variables such as personality, motivation, and interest as well as cognition. However, as applied to the instruction of individual children the main approach over the last twenty years has been predominately cognitive, as exemplified by the profile tests such as the Illinois Test of Psycholinguistic Abilities (Kirk, McCarthy and Kirk, 1968), and the Frostig Developmental Test of Visual Perception (Frostig, Maslow, Lefever and Whittlesey, 1964), each of which has been used to construct individual programs.

Though well meaning and sophisticated in many respects, this methodology has always been criticised for the inadequacy of its basic construct validity and its failure to identify the behavioural universes which are to be predicted. However, the general approach which profile tests incorporate: that of identifying extra-individual differences, is clearly sensible and worthy of further development in both cognitive and non-cognitive areas.

Subject Variables

Both types of variables may, for the present purpose, be described as "subject variables" since they interact with the instructional environment to determine the outcome of learning behaviour. Thus far there have been two broad areas of application of these variables in educational settings: classification and prediction in order to screen children at educational and emotional risk; and diagnosis intended to provide a basis for individualizing instruction. (It is the latter area of course which has produced the most difficult technical problems).

A Classification of Subject Variables

One of the basic problems inherent in examining subject variables is to locate them within a meaningful set of categories. In our view this can be best achieved in a form of systems approach and we classify the broad classes of subject variables in four ways:

1. *Constraints:* There are many variables which have been identified as being related to achievement which are, from the point of view of the educationalists, unmodifiable. These would include age, socio-economic class of parents, sex, etc. Some people would consider that intelligence, which has innate cognitive elements, belongs to this group but this is contentious.

2. (a) *Semi-constraints:* The second group we define as semi-constraints in that they represent dominant ways in which the child engages the environment but nevertheless may be subject to modification by introducing alternative strategies and modes of intervention, e.g. conceptual tempo, field-dependence, introversion-extroversion.

3. (b) *Semi-constraints:* Our second group of semi-constraints is more subject to situational influences, e.g. locus of control, self-esteem. Anxiety may also belong to this group.

4. *Programmatic variables* These refer to the individual's performance at the beginning of a specific task and would usually be associated with an analysis of strengths and weaknesses: i.e. the possession of prerequisite skills. Often the testing involved is criterion-referenced rather than norm-referenced.

We would argue that each class of subject variable possesses optimal utility at different levels of the system. But semi-constraints seem to us to operate across both the levels of systems and individual programming and this would seem to be of most interest to practitioners. The following will therefore concentrate upon these.

2 *Personality variables which are of importance to learning*

In the above classification system personality variables are, therefore, defined as semi-constraints, being susceptible to some degree of modification through intervention. Even so it is probable that the first two of these to be discussed - introversion/extroversion and anxiety, refer to *traits* which have been a strong genetic basis. In considering these, however, it is not proposed to enter the psychometric debate surrounding any distinction to be made between *traits* and component *states*. The assumption is made that such variables are multi-dimensional and that some components are more susceptible to intervention than others.

Introversion/extroversion

Personality research may be thought of as relating to the development of personality through various stages in the child's life, e.g. Erikson (1963); or to the structure of adult personality, e.g. Cattell (1964); Eysenck and Eysenck (1969). It is considered that the first approach yields interesting descriptive data, but the second incorporates well developed psychometric methodology and has therefore, in our view, the greater potential for practical application.

Here it may be noted that many of the existing personality tests compare favourably with the older established cognitive tests in possessing an explicit theoretical rationale and have demonstrated important virtues, particularly for use with older children and adults: Cattell's High School Personality Questionnaire is a case in point. However, we are primarily interested in personality measures which can be more readily applied to younger children and of these it seems to us that by far the most appropriate are the Eysenck scales for assessing introversion/extroversion.

The dimension of introversion/extroversion has appeared in practically every large-scale investigation of personality factors. Eysenck describes the dimension in terms of psychological learning theory as this applies to speed of inhibition: introverts inhibit more slowly and therefore condition more readily; extroverts inhibit quickly and therefore condition slowly. A great many subtleties derive from this basic form of analysis; it is obvious that introverts can learn outgoing, sometimes inappropriate patterns of behaviour. However, the conventional view is that introverts tend towards more withdrawn self-contained personalities, whereas extroverts who need ever-changing external stimulation are more socially active.

Eysenck and Eysenck (1969) consider that the dimension of extroversion is clearly identifiable as early as four years and is also sensitive to both age and sex differences. The main instrument for this purpose is the Children's Personality Inventory (Eysenck, 1965), which has recently figured in a number of experiments and longitudinal studies. A CPI consists of sixty items and is easily administered in both group and individual form. However, the construction of the scale received some criticism from Bennett (1973) and in an Australian setting Hansford and Neidhart (1977) carried out a further evaluation. The latter workers replicated some of Bennett's findings and noted some of the same limitations. One interesting feature of the results was that, although the general pattern of responses supported Eysenck's theoretical stance, the factor analysis of the data substantiated the view that extroversion has two components: impulsivity and sociability. The second of these is clearly related to social conditioning.

Irrespective of these technical psychometric issues it is likely that extroverted and introverted children differ profoundly in the ways that learning tasks need to be presented to obtain optimal performance. Eysenck (1978) claimed that an examination of teaching method/personality interactions revealed that extroverts are not intrinsically poorer students but

were disadvantaged by methods, the design of which favours introverts, both for strengths and weaknesses which could, with skilful guidance, be used or obviated.

For instance introverted children may be placed at risk by a classroom climate which does not capitalise on their capacity to carry out sustained work under relatively solitary conditions. Reciprocally, extroverts may be at risk of evolving faulty learning styles in the context of teaching methods which favour their more gregarious personalities.

Introversion/extroversion has featured in an extremely interesting controversy surrounding the implications of some early work by Rushton (1964) which suggested that successful achievement in primary schools is related to stable extroversion. However, the positive correlation between extroversion and achievement vanished round the age of thirteen and, indeed, introversion was subsequently related to successful performance. The basic data makes good sense in view of the social climate of contemporary kindergarten and infant education. Young introverts, unless they lose their learning superiority to adapt quickly, may be at some social and educational risk at the beginning of their school careers. However, the matter is somewhat more complex as we have seen that eventually the stable introvert wins out. There have been several explanations of this effect: Anthony (1977) correlated ability with a decrease in extroversion. Extroverts fall behind in the development of ability, while introverts make faster progress. A simple explanation is provided by the finding that extroverts, instead of concentrating on work, seek non-academic outlets such as sport for their energies, and, in any event, have difficulty in concentration. We believe, however, that a more persuasive explanation is that the nature of reinforceable behaviour changes: in the latter years of schooling introverted behaviour is rewarded. Indeed it is likely that the shift in relationship between extroversion and achievement and the inexplicable growth in appropriate behaviours of all kinds in the early secondary school years is best seen this way - the extroverted behaviour acceptable to the primary school comes progressively under extinction.

Anxiety

An important aspect of Eysenck's model of personality is his second dimension of neuroticism, which reflects the extent to which anxiety is incorporated into personality. The interaction between neuroticism and introversion/extroversion generates an interesting descriptive and predictive amount of maladjustment. Extreme introversion, it is argued, when associated with high levels of neuroticism is related to emotional disturbance like anxiety states, phobias, psychosomatic symptoms and withdrawal. On the other hand, extreme extroversion and high neuroticism seems to produce individuals of the more overtly maladjusted or conduct-disordered type. However, anxiety has attracted a great deal of attention from educational researchers for a variety of other reasons, principal among these being an interest in anxiety as a drive towards learning and the destructive effects of excessively high levels of anxiety, c.f. Sinclair (1969) who like other workers argued that the effects of anxiety on performance can contribute to a more precise understanding of children's learning (c.f. Gaudry and Spielberger, 1971).

Undoubtedly the most comprehensive long-term research carried out in this area is the work of Sarason and his associates at Yale University. This group hypothesised that the origins of socialised anxiety are to be found in the family setting where behaviour is subject to constant evaluation. Adverse parental evaluation causes feelings of hostility to develop in the child which cannot be expressed because of its fear of withdrawal of love and the consequent threat through its dependence needs. The process sets up a vicious cycle in which feelings of negative self-esteem depress performance on future tasks and compound the effects even further. In many cases the school situation also arouses anxiety because of the stimulus similarities between parent and teacher. Thus, anxiety arouses task-irrelevant responses which have a debilitating effect upon performance.

This ambivalence upon the part of parents and caretakers has been observed by a wide variety of other workers. For instance Cashdan and Williams (1972) stated that the most potent cause of anxiety to be seen in children is uncertainty: if other people's behaviour is inconsistent and unpredictable we cannot be sure what will happen next or control it, leading to apprehensiveness and uncertainty. They saw insecure and uncertain home backgrounds as a prime cause of anxiety which may lead to children eventually giving up and withdrawing or making desperate attempts to control the environment.

As a basic physiological index, anxiety can be measured in a variety of ways: questionnaire ratings, physiological measures (GSR) or performance in different stress conditions. Probably the most frequently used test to measure anxiety is the Manifest Anxiety Scale (MAS) (Taylor, 1953). This test consists of fifty questions of the type: "I blush easily, I worry". The subject indicates whether each statement is true or false and its score is based on the total number of items marked as indicative of the presence of anxiety as a personality trait.

In educational settings excessively high anxiety has its effect in two ways: firstly, in its contribution to maintaining undesirable behaviour patterns which define the child as marginal from a behavioural point of view and secondly for its demonstrated effect upon learning. A number of factors impinge upon this of course, the two most important probably being poor experience of success and with it access to positive reinforcement and lack of consistency in the applications of contingent reinforcement.

Cognitive Style

The construct of cognitive style has been used to describe typical strategies people use to perceive, remember and solve problems. It is an integrative concept in that its definition bridges the personality-cognitive dimension of the individual. It thus refers more particularly to the manner of cognition as opposed to the content of cognition. Two dimensions of cognitive style in particular have initiated considerable research interest. These are field dependence-independence and reflection-impulsivity, it being argued that these are broad dimensions of individual difference which extend across both perceptual and intellectual activities (Witkin et al, 1977).

(a) *Field dependence-independence*

This refers to a consistent mode of approaching the environment in global as opposed to analytical terms. Thus the field-dependent person tends to experience events globally, in an undifferentiated fashion; whereas the field-independent person tends to articulate figures as discrete from their backgrounds and to easily differentiate objects from embedded contexts. Field-dependent (or global individuals) tend to identify with a group, exhibiting a social orientation in which they are more perceptive and sensitive to social characteristics such as names and faces than are field-independent persons, but they are also more susceptible to external influence and are more markedly affected by isolation from other people (Witkin et al, 1962). Field-independent (or analytical) individuals, on the other hand, have more facility with tasks requiring differentiation and analysis, whether in identifying more easily the presence of logical errors or in understanding more quickly the point of a joke.

To measure this dimension Witkin has used a number of tests - the Body Adjustment Test and several versions of the Embedded Figures Test. The latter is a test of ability to find a simple form when it is hidden within a complex pattern, and as it can be readily administered in group form is the most widely used test of its type.

Since field-dependent people are particularly interested in and selectively attentive to social aspects of the surrounds it is not unusual to find that such persons perform better on learning materials with a pronounced social content. On the other hand any inferiority shown in field-independent children on such material is more likely to be due to lack of attention, rather than lack of ability. Their performance can therefore easily be made equivalent to that of field-dependent children by bringing social material to focal attention. This aspect of cognitive style raises the issue of intensive motivation, for field-dependent students are more likely to require externally defined goals and reinforcements than field-independent students who tend to have self-defined goals and reinforcement. Moreover evidence suggests that field-independent persons tend to learn more than field-dependent persons under conditions of intrinsic motivation. It would seem that field-independence is the preferred cognitive style in educational patterns and this raises the obvious technical issue as to whether students should be taught field-independence problem solving approaches rather than in terms of a dominant cognitive style which is field-dependent.

(b) The second dimension: the *reflection-impulsivity* dimension or conceptual tempo, refers to individual differences in response to a situation of response uncertainty. Kagan et al. (1964) in a series of comprehension studies noted that some children were "reflective" in decision making; i.e. were able to scan and deliberate before making a decision. By contrast, other children were noted by Kagan to be "impulsive" decision makers, who consistently made rapid error-prone responses.

To measure this dimension Kagan has developed the Matching Familiar Figures Test (MFFT). This is a matching-to-standard task involving several alternatives to create response uncertainty. In this test the subject is shown a familiar figure and a number of variants and is asked to choose the

replica of the standard which is amongst the variants, measurements are made of response latency and error rate, different forms of this test being available for different age groups. The construct has been found to be related to a number of academic learning tasks - reading achievement, learning disabilities, inductive reasoning, task persistence, etc. (Kagan, 1966) with impulsives consistently demonstrating poorer performances than reflectives. Consequently, research has indicated that reflection-impulsivity may give important clues to a child's level of educational risk (Becker, 1977): impulsives, due to their faulty learning approach, are more prone to school failure. Moreover Messer (1976), in a review of literature, indicated that reflective children are more persistent than impulsive children and have more confidence in approaching intellectual tasks, make fewer errors in serial learning tasks and are more highly motivated to achieve. It may be concluded that the reflective style is the preferred mode, at least in terms of school success. Consequently, several strategies have been investigated for the modification of an impulsive tempo towards a more reflective style. Of these the most successful has been modelling, e.g. Debus (1974).

A second class of semi-constraints contain subject variables which seem to us at least, to be more closely related to experience and consequently are modifiable in some part: these are self-esteem and locus of control. *Self-esteem* has been one of the many variations on the self-concept theme which has figured in most major educational studies over the last 20 years. The multi-dimensional nature of the concept is apparent from such reviews as that of Wylie (1975) etc. A useful approach to this complex and subtle problem is that of Hebeisen (1976) who hypothesized four dimensions of self-esteem: basic acceptance, conditional acceptance, self-evaluation and real-ideal self-congruence. The *basic acceptance* theme is important to early childhood as it antedates a time of self-concept and is subject to change through experience. *Conditional acceptance* is contingent on meeting standards and is subject to the approval of others. *Self-evaluation* involves a comparative judgement as to how the individual sees his or herself as compared to others. *Real-ideal self-congruence* is the match between the individual's perception of his or herself and what ought to be.

The first three of these are clearly related to social experience and are aspects of the process of differentiation so ably described by Talcott Parsons (1959) is his now classic paper, The School Class as a Social System. Self-esteem has been shown to be related to most forms of behaviour and educational deviance, although a number of complexities occur: for instance children in segregated schools often show unnaturally high levels of self-esteem and may return to earth rapidly in unsegregated situations.

A variety of tests have been used to measure self-esteem. For instance, Schlien's Self-Acceptance measure is an unstructured test consisting of a Q sort for which the items are not supplied. The subject is required to make up sentences about himself and rank them for real and ideal value.

However, the most widely used test, is the Coopersmith Self-Esteem Inventory in which the child is required to respond to statements as to whether they are "Like me" or "Unlike me" (Coopersmith, 1967).

Returning to Hebeisen's four dimensions it is evident that a cardinal issue is the basic acceptance by the child's teacher and peer group. This prevention of failure may be contingent upon it being prepared for school by interaction with non-handicapped peers and being trained in the type of behaviour which will bring peer reinforcement. Reciprocally, non-handicapped peers must be encouraged to deliver appropriate reinforcement. Assuming that there is basic acceptance, conditional self-esteem can be promoted by those successful learning experiences derived from structured programs which promote error-free learning under conditions of continuous reinforcement and which set the stage for more complex behavioural patterns. The issue of comparative self-esteem is equally important and poses difficult problems for teachers; for creative attempts may need to be made to ensure that all children have opportunity to compare themselves favourably with their peers, even if within a very restrictive range of activities. Often this can be achieved through non-academic behaviours such as arts, craft, music and games, c.f. Purkey (1970) and Beecher (1978).

Locus of Control

The concept of locus of control refers to the extent to which the individual perceives himself as having control over what happens to him in his transactions with the environment. Those who see themselves as being in control of their own destinies are characterized as "internals": those who perceived themselves as controlled by outside forces are designated as "externals". An extensive literature suggests that "internal" perceptions are positively associated with high achievement (Rotter, 1966; Lefcourt, 1976), although it has to be conceded that locus of control lends itself to this form of result. Lefcourt considered that locus of control is a situational concept rather than a general trait: people are "internal" or "external" relative to specific events and situations. Even so the variable has figured prominently in a number of important educational researches. Lefcourt describes a number of tests of locus of control, the most frequently used intrument in research with children is, however, Crandall's Intellectual Achievement Responsibility Questionnaire (IAR) (Crandall, et al. 1965), a short test which deals exclusively with the child's belief about the nature of its worth in terms of internal and external perceptions. A sample item from this Questionnaire is:

(5.) *Suppose your parents say you are doing well in school.*
Is it likely to happen -
(a) because your school work is good, or
(b) because they are in a good mood?

Locus of control raises some interesting issues relating to contingency management. External perceivers may in fact see their environment as punishing and may not be able to identify the sources of positive reinforcement which are available to them, hence withdrawal, apathy, etc. It is therefore likely that

marginal children need to identify in an explicit way these contingencies and indeed if this process does not occur naturally, need to be taught to do so: this, of course, is one favourable aspect of control contingency systems such as token economies. However, these matters are by no means simple and indeed Lefcourt made the observation that the perceived attribution of control may be different for punishing consequences than for reward with obvious implications for the style of classroom management if the promotion of external perceptions of the locus of control is to be avoided.

3. *Implications for Educational Programming*

We now propose to consider some of the technical implications of the above in terms of their importance for the design of programs. Our comments will be directed to the following five areas:

a) Individual programming;
b) programming for generalization via teaching appropriate strategies;
c) forming optimal teaching groups;
d) general issues of teaching and classroom management;
e) systems evaluation.

Individual programming

One of the most active workers in the general area of aptitude/treatment interaction is Leith who has summarised the basic issue thus:

> *"There are, broadly speaking, three points of view on the efficiency of teaching methods. One holds that the evidence of many comparisons fails to justify the idea that any method is superior to others (save extreme and eccentrically chosen ones). Another claims that there are indeed some methods which can be shown to be better than rival methods - particularly when the specific purpose of the teaching is identified. The third view contends that different methods are especially suitable for particular kinds of learners, some for one kind, some for another."*
>
> (Leith, 1974)

Leith has therefore pointed out that educationalists must pay serious attention to the need to adapt learning situations to learners. Thus fully adapted programming demands that all relevant subject characteristics be entered into the aptitude/treatment interaction. We have noted that measures of personality, anxiety, cognitive style, self-esteem and locus of control may be influential in determining an optimal individual program and monitoring its progress. Allied to this is the assumption that certain tasks require particular styles of approach and will consequently favour one style over another. However, the most important component in all this is programming for effective learning strategies or, as is demonstrated by the work of Stott, seeking to avoid

the development of faulty learning styles. This approach has the virtue of being readily translated into classroom practice. Stott recently suggested fifteen principal examples of faulty learning styles, c.f. Appendix, although it is evident that most educationally high-risk children would demonstrate more than one faulty learning style.

Like other writers Stott distinguishes between primary and secondary behavioural handicaps and he lists temperament, impulsivity and anxiety which may in fact combine to cause school failure. He believes that early intervention is therefore vital and a recent publication (Stott, 1978) proposed a number of management techniques by which faulty learning styles can be avoided. Through these methods, it is claimed, the child becomes conditioned to learn that certain behaviour styles such as attentiveness and reflectiveness bring success. Many of the opportunities for this occur in the context of children's play and teaching games.

For instance self-correcting game-like activities employed in teaching basic skills provide a setting for a more natural form of learning where the child is self-directed by contrast with being subjected to teacher-centred curricula and other forms of teacher-monitored tasks. Through using peers extensively in small group activities he enables remediation to be undertaken in the regular classroom. An example of one of the games which Stott uses involves finding a match card from a set, the distinctive approach being to condition the child to withhold an impulsive approach and "think ahead", i.e. to rehearse the solution mentally in advance.

Teaching Strategies for Generalization

An important feature of non-cognitive measures is their susceptibility to environmental manipulation with the clear implication that the strategies for effective learning and its ultimate generalization can be programmed. For instance strategies for reflective as opposed to impulsive approaches can also be taught as can analytic cognitive styles. However, this approach requires that in order to obtain and maintain flexible and adaptive behaviour, such strategies have to be formally identified and programmed effectively. This view is of course comparable with that of Stott who seeks to identify and eliminate faulty learning styles.

In addition to simply teaching appropriate strategies there are of course a number of other approaches to promoting generalization which have been described by Stokes and Baer (1977) in their important paper. However, it can be claimed that the technology of generalization which they advocate is still largely undeveloped (c.f. Ward, 1978) and certainly does not match that available for discrimination learning.

Group Composition

An important aspect of using subject variables is the possibility that interactions between various types of individuals may optimalize learning and this assumes some significance in view of the present interest in peer tutoring and modelling in young children. Children who are experiencing difficulties in socialization may require a highly structured approach to learning the interpersonal skills of communication and play. Most work of

this nature has focussed upon dyadic relationships rather than small groups. Leith (1974) has reported a fascinating series of experiments in which the effectiveness of various forms of dyadic relationships is examined, e.g. two anxious/shy children. Research has indicated that homogeneous pairs worked better than heterogeneous pairs. Many teachers have of course explored these possibilities, e.g. pairing two introverted/shy children or a shy withdrawn child with a more outgoing one, etc.

One approximation to individualization would be through groups with similar personal and learning characteristics. Indeed it has been said that perhaps grouping children by personality type might be more productive than cognitive grouping (the trouble being that nobody would wish to teach the unstable extroverts). Thus one part of the class (extroverts, say) might be set aside for teaching by discovery methods.

Issues of Teaching Style and Classroom Management

The topic of teaching style and its relationship to educational achievement has been a traditional concern of educational psychology, the latest round of debate being provoked by Bennett's work in the U.K. Rather than refer to this material and indeed a host of data on classroom interaction from various sources we would wish to derive the following comments at first principle from our consideration of semi-constraints.

The first strong point to be made of course is that not only is there the possibility that certain instructional environments may be facilitative to certain types of children but to others they can be disruptive and punishing. An example of this would be the situation of a noisy socially interactive classroom full of varied materials and activities in which the teacher attempts to promote self-discovery learning. Such an environment may suit the stable extrovert extremely well, but could be damaging to an anxious introverted child who may need a much more secure and structured environment. It may well be that in examining the educational implications of individual differences of the type under discussion we have to identify a methodology which avoids situations which place certain types of children at increasing risk rather than one which is maximally facilitative for others. The idea of course is the classroom situation which is maximally facilitative for all children, but we are concerned with the prevention of educational failure and in the interim period the lesser goal is probably the more important in terms of its social consequences. The evidence seems to point to an environment which possesses sufficient structure to provide security and controlled learning conditions for children at risk, combined with opportunities for creativity and self-discovery.

Systems Evaluation

We have, therefore, ranged over a number of areas which have been dealt with more comprehensively by Cronbach and Snow (1977) in their comprehensive survey of the literature pertaining to aptitude-treatment interactions. However, like these others we share a view that the study of this area is still in its infancy and that in any event the prediction of educational performance refers to combinations of factors. We have

therefore located our variables which have been described within a systems rather than an experimental, setting. The group of semi-constraints comprises three subject variables which have implications for the operation of sub-systems: personality; anxiety and cognitive style; the second pair, self-esteem and locus of control have the important characteristics of acting as markers in the success of the general system. These classes of variables contribute towards summative and formative data, but it may well be that their greatest utility, and this is undoubtedly amenable to experimental test, is whether they will be effective predictors of response generalization and ultimately generalisability. One of us (J.W.)is indeed currently engaged in drawing up a general model for program evaluation which incorporates these variables and which, it is anticipated, will be capable of application across a variety of situations in special education.

At this point we would wish to make a comment about the necessity to present subject variables and the topic of aptitude-treatment interactions within a different conceptual framework. There is some disappointment and indeed rejection of subject variables in special education, much of which has come from people who have a strong suspicion of all forms of differential measurement. Thus a considerable amount of criticism has been levelled at the methodological aspects of the psychometric half of the aptitude-treatment interaction. It is worth reiterating, however, that there are two main components to the paradigm, and that failure can be laid equally at the door of those concerned with instructional development. Whatever conceptual framework is adopted the evidence is that educational achievement is an area of extreme complexity and it may well be that only very few constellations of variables are stable across situations. What seems to be reasonable is that if we examine measures such as Self-Esteem and Internal Achievement Responsibility these clearly derive from and reflect the total situation. When the picture obtained from these is positive it is likely to reflect the successful achievement that comes from suitable learning environments. Where it is negative it is a strong possibility that the learning environment does not suit a particular type of child, all things being equal, and that in addition to depressed self-esteem high levels of disruptive anxiety may be present. Such a combination of circumstances is ripe to provoke either withdrawn or apathetic behaviour on the one hand or rebellious uncooperative and disruptive behaviour on the other.

Perhaps the most clear demonstration of a systems evaluation may be seen in the results obtained from the "Follow Through" experiment in the U.S. which is ostensibly a planned variation in the education of disadvantaged children. "Follow Through" (Becker, 1977) is a longitudinal study involving large numbers of sites and children. From the data currently available after four years of follow up it is most interesting to note that those instructional methods which have produced above average levels of performance in educational achievement have also produced comparable superiority in measures of self-esteem and IAR. This is a most remarkably consistent result and strong vindication for highly structured methods of teaching used with disadvantaged children or children at educational risk for whom the programs were targeted. It is also a dramatic demonstration of the way in which self-esteem and IAR measures can monitor the operation of a system. Had there been discrepancies between achievement and IAR, or inverse relationships, this would have cast some doubts upon the ultimate generalization of the behaviour, so here,

therefore, we see this class of semi-constraints as having considerable potential for systems in addition to individual application.

Conclusions

In conclusion we wish to return to the original theme of the conference, that of prevention. Another way of looking at prevention is to see it as the avoidance of social and educational marginality which, in the case of developmentally disabled children, results from a failure of curricular and social integration. It is reiterated that non-cognitive variables assume very considerable importance in this area. For example, the developmentally disabled child in particular will be placed in a marginal position on entry to school more by emotional and behavioural problems than an obvious lack of prerequisite cognitive skills. It will be at continuing risk of marginality if it does not receive a balance of carefully planned curriculum experiences, taught strategies for generalisation and instructed in an environment sensitive to its general characteristics. The result of cumulative failure will undoubtedly be diminishing self-esteem and an "external" perception of locus of control.

It is evident, therefore, that in order to overcome the adverse conditioning and low self-esteem associated with failure every human instructional resource needs to be mobilised through favourable combinations of suitable materials, methods and motivation.

The subject variables described in this paper refer in the main to intrinsic factors in motivation as opposed to extrinsic factors such as contingency management. In drawing attention to these various classes of factors we would not wish to convey the impression that there exists a cookbook of prescribed aptitude-treatment; nor would we deny that the most potent influence on psychoeducational growth must inevitably be the content of the curriculum experience which the child encounters. What we would hope to demonstrate is that there exists a number of important variables which can both enhance individual programming and be used to monitor the effects of educational systems. In order for the best use to be made of such information, further research will be required and also experience of practical applications by teachers. Only then can it be demonstrated whether the underlying theories are inherently sound and capable of translation into educational use.

Just one final point; it may well be that in the future much of early childhood education for children at risk will be in the context of highly prescriptive and controlled programs. If this is to be, it then follows that much of the teacher's activity may be concerned with optimalising learning through the use of personal characteristics, creative use of peer tutors and peer groups, and general exploitation of both personal and interpersonal variables in learning. Moreover, though the basic content of curricula may be amenable to precise planning it is our view that the generalisation of learned behaviour may have to be approached through teaching broad strategies and systematically varying educational environments in order to test their effectiveness. A whole new world of creative teaching opportunities is before the early childhood educator.

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APPENDIX I

PROFILE OF FAULTY LEARNING STYLES

	Punch card column	DEGREE OF SEVERITY (punch card row) 1	3	3
A. - Afraid to begin or commit himself				
B. - Assumes role of dull child				
C. - Solitary, peculiar ways				
D. - Impulsive, hyper-active				
E. - Distractible				
F. - Over-active and fidgety				
G. - Crazy, un-predictable				
H. - Ways of evading				
J. - Doesn't care				
K. - Lethargy				
L. - Relies on charm				
M. - Hostile moods				
N. - Loss of concentration				
O. - Seems not aware				
P. - Insists on own way				

Name of child _____

Boy/Girl

Teacher _____

Class _____

Type of class _____

Date of completing Guide _____

Physical handicap (write in as marked) _____

Social handicap (write in as marked) _____

From Stott, D.H. *Helping children with learning difficulties: A diagnostic teaching approach.* (London) Ward Lock Educational, 1978.

UNWILLINGLY TO SCHOOL - MOTIVATIONAL/EMOTIONAL FACTORS AS AN IMPEDANCE TO CLASSROOM LEARNING IN YOUNG CHILDREN

Helen M. Connell

Introduction

The influence of attitudinal factors upon the process of learning is an important but relatively unexplored area of education. From Binet onwards attention has been paid more to the innate abilities of children, on what the child *can* learn, rather than what he *wants* to. We have developed reasonably reliable tools for assessing cognitive ability which correlates with functions of the neocortex; the influence of the phylogenetically older limbic brain upon the process of cognition remains somewhat of a mystery; yet no one will deny its importance as the substrate for emotionally determined behaviour. By the time he reaches the schoolroom, a child's emotional reactions to the education material presented to him relate to previous life experiences, relationships with significant adults and children within his lifespace and his socio-cultural environment. The transfer of attitudes from home life to school life, from parent to teacher, from siblings to school mates are an important study in themselves. There is considerable evidence that unless the child develops a feeling of 'basic trust' in his environment, and this depends upon a satisfactory relationship with parent figures, his performance in the schoolroom is likely to be jeopardized (Ekstein and Motto, 1969) since he carries with him the negative ingredients of distrust, low self esteem and feelings of inferiority. Biller (1972, 1974) has reported the poor scholastic achievement found in fatherless boys, as being a sign of rebellion in what they perceive as a female dominated environment since in the early grades most teachers are female. If he comes from a home ridden with jealousy, a child functions poorly in competitive situations (Wolff, 1973), sometimes to the extent that he refuses to try at all, for if he fails this exposes him to further frustration and anxiety. The effect of culturally determined attitudes on the child's scholastic progress has been explored in greater depth and in this audience there is no need for me to delineate the motivational problems of the disadvantaged child, especially as the Schonell Centre has contributed substantially to research in this area.

Motivational factors in the child's adjustment to learning are of crucial importance to the children's psychiatrist. All too often a case history reports failure to achieve up to potential and lack of involvement in classroom activities because of emotional disorder. If psychic energy is spent in attempts to solve emotional problems there is little left over for the business of living. Anger and anxiety both impede learning; if a child is to attack his school work with the appropriate amount of aggression, he must not be conditioned to develop anxiety because he expects retaliation whenever he displays his aggressive feelings. A personality crippled by anxiety cannot cope with learning strategies any more than a physically handicapped child learn certain physical manoeuvres. Emotional disorder

can sap creative ability. Although I have so far focussed on the negative aspects of emotional disturbance - the disinterest and apathy shown by the disturbed pupil - this is not to deny that some children respond to insecurity with an increased motivation to achieve. In these circumstances the schoolroom becomes a haven; they are able to relate to stable figures and achieve a feeling of mastery over events occurring within its four walls. Unfortunately there is a danger here and this lies in overcompensation; such children are at risk of becoming tense, driven individuals with an insatiable need for scholastic achievement in order to feel secure. Marks come to matter more than people.

Clinical Aspects

From the viewpoint of the clinical child psychiatrist I propose to examine the categories of disturbance which make up the spectrum of childhood psychiatric disorder and demonstrate how psychopathology is reflected in school performance. I shall use the World Health Organization classification of these disorders (Rutter et al. 1975) for this purpose as follows: Firstly, the *adaption reactions*. These are described as transient and reversible responses to stress which may be external, e.g. the loss of a parent figure, or internal, e.g. endocrine changes associated with puberty. A varied symptomatology may develop; the disturbance is outside the limits of normal but there is no major change in general development. Teachers present will know full well how parental disharmony and divorce can be reflected in their offspring's adjustment. Among children referred to me by the Family Court for psychotherapy, a common sequence of events is increasing scholastic failure as interparental problems escalate with improved adjustment once the divorce is through, when the child has been allowed sufficient time to mourn the lost parent and often, work through his guilt for it is not uncommon for children to blame themselves for the parental rift. Let me give an example of this type of disturbance.

Adaption reaction in a 11 year old boy

Jim was referred because even an experienced headmaster found the notes he passed round his class sufficiently disturbing to be labelled "to be opened by a psychiatrist only". He had a mass of untidy hair, thick spectacles, was of short stature, suffered from scoliosis and wore a spinal brace. His protruding teeth were also encased in metal. Speech was indistinct and close listeners were sprayed with droplets of saliva. Jim's father had recently been diagnosed as suffering from inoperable bronchial carcinoma. His mother was quite depressed and had recently started work outside the home. He had no siblings. Although he had coped with his deformities in middle childhood, with the onset of puberty he became more aware of his bizarre appearance. He was called 'spider man' by groups of giggling girls; the one with whom he would have liked to establish a relationship said she 'wouldn't be seen dead with him'. At this stage he learned of his father's illness, and because of involvement in their own difficulties, his parents withdrew their support. He had always been quite an artist and he discovered that - depending on the nature of his subject - he could get some compensation for the insults and rebuffs of the playground. A suitable drawing plus a caption would be handed round and he became known as the boy who could produce 'the best'.

Jim came for weekly psychotherapy with a sympathetic male therapist. Discussion with his dentist and orthopaedic surgeon resulted in the spinal brace being discarded and a less obvious dental appliance. He was encouraged to join in peer activities outside the home and, became popular in a youth club where his artistic abilities were capitalised in a more socially acceptable way. As his father's death approached, Jim was able to offer his mother some support and in time coped with the bereavement quite realistically.

Follow up after 2 years showed a well adjusted youth who had started apprenticeship as a draughtsman. His appearance had improved somewhat and he had learned to capitalise on his hair and spectacles by adopting a 'studious' pose. His prognosis is good.

The adaption reactions shade into the more serious *emotional disorders* in which precipitating factors may be less significant and the child shows a persistent and disproportionate amount of anxiety or depression or an admixture of both, in response to what may seem objectively quite trivial life events. Where anxiety is prominent and pervasive and where psychological manoeuvres (i.e. defence mechanisms) common to the neuroses of adults are in evidence, the term *neurotic disorder* is generally applied. I should like to give a series of vignettes illustrating how these may be manifest by motivational problems within the classroom.

Neurotic disturbance with depressive features

Paul aged 11 was admitted to hospital because he suffered from a variety of complaints, chiefly headache and a feeling of lassitude but examination showed no physical cause for them. His parents reported that he had not been himself for several months. His personality had changed. Instead of the pleasant cheerful boy they knew he had become irritable, and aggressive at times, at others silent and withdrawn. He had lost friends because of this and his former hobbies held no interest for him. He seemed to be unable to settle to anything and continually complained of feeling bored. He had been found weeping at times. His mother said that he had developed a morbid interest in death and dissolution. He had hinted at 'ending it all' and on one occasion had swallowed a handful of pills prescribed for his mother. He had trouble in settling to sleep, was restless throughout the night and complained of nightmares. One of the salient features of his history commented on by parents and teachers, was a deterioration in school work. He had previously had a good academic record but now his teacher reported apathy and listlessness, failure to concentrate and poor untidy work. His parents said 'he used to fight for what he wanted, now he gives up - he runs away. He bottles things up and lashes out if anyone provokes him'. Clinically this boy was suffering from a depressive illness which appeared to be reactive to certain family problems. These related in turn to an injury sustained by his father at work, his inability to support his family and his mother's difficulties in managing a home and earning a livelihood. There was a history of a similar disturbance with Paul at the age of six when his parents separated for a while; it seemed as if he had been sensitized to loss at this stage. Paul was treated by a combination of antidepressant drugs and psychological support to help him cope with his difficulties. After one month his father reported "there's

been a tremendous change. He has become cooperative, has more energy and has ceased complaining of all his aches and pains". His teacher wrote 'Paul is almost his old self, he is catching up with work and his interest in life has revived'.

Neurotic disturbance with obsessional features

Mary was a very intelligent 11 year old girl whose mother brought a list of symptoms as she was afraid details might be forgotten in the heat of the moment.

Mary had always been a quiet conscientious child who worried excessively over minor matters. Troubles had started two months before. She began to worry lest she might harm her parents; and this progressed to ruminations about actually killing them. She continually worried about minor 'transgressions', for example, taking an apple from a friend's house, looking at another girl's book during a test at school. She was unable to sleep at night until she had 'confessed' these pecadilloes. Compulsive symptoms then made their appearance. She continually washed her hands; mother reported this occurring up to 50 times a day.

Mary presented as a neat, methodical, over-conscientious individual who worried excessively before classes at school in case she would not 'get the answers right', and became so bogged down in detail she never finished her work. The family were visited by a social worker who reported 'The house is excessively tidy, even in the garden not a blade of grass is out of place. Mary's father objects to 'untidiness', picks up crumbs from the carpet before he leaves for work, he checks light switches and taps continually. He is an accountant and well known for his ability to balance everything to the last cent'.

Psychotherapeutic sessions with Mary revealed her obsessional personality and some of the anxiety she felt in relation to early puberty changes.

Her progress was followed for six months, the normality of her increased interest in sex was explained and efforts were made to develop interests outside the home, particularly those involving unstructured activities (painting, clay modelling and bush walking). Although initially she became quite depressed and spent a short period in hospital after she told her mother 'the world would be better without me', her symptoms subsided. Her prognosis remains uncertain.

Neurotic disturbance with conversion symptoms

Louise aged ten was referred for psychiatric assessment after her sixth admission to hospital. She presented a cheerful smiling face but walked with an exaggerated limp, watched carefully to see its effect and if it was ignored drew attention to it - "its difficult going down stairs isn't it?" At the age of seven Louise had suffered minor trauma to her left leg when a wall collapsed near where she was playing, subsequently she suffered "blurred vision' - then "blindness" in her right eye and was forced to miss school and spent time at home with her mother, an unhappy migrant who was experiencing considerable adjustment problems. When she did return she adopted an attitude

of invalidism, sat in the front of the class in order to see, demanded teacher's attention continually and at times reported that she was unable to work because of eye trouble, headaches, dizzy spells and nausea. After several months these symptoms settled and then Louise's left leg again received minor trauma as the result of a playground scuffle. Her teacher was unsympathetic and would not allow her to go home so she sat "with her handkerchief stuffed in her mouth to stop her crying all afternoon" and then the limp started in real earnest. She began a round of hospital visits, father was hinting at compensation at this stage, school attendance became erratic and her performance when she was there, extremely poor for a girl of her undoubted ability.

Her mother was a dull,anxious person who attributed her own skin complaint (neurodermatitis) to worry over Louise and showed major emotional involvement with the symptoms.

Louise's treatment involved demonstrating to her that she could use her leg (she was encouraged to join a skipping competition and forgot her paralysis in the heat of the moment), explanation to her and her family as to how histrionic symptoms develop and why she had needed to be ill. She was receiving no attention from her unhappy mother, her father was holding down two jobs and her older siblings were seldom at home. Remedial help enabled her to catch up with some of the work she had missed - she had virtually developed a secondary phobia of school - and when last seen she was attending regularly and achieving satisfactorily.

Conduct disorders characterised by antisocial behaviour, often of sufficient degree to be labelled *delinquency* pose a serious problem in the classroom. The lack of interest and motivation which are associated with these conditions relate to environmental factors to a degree but some of the children are not very bright and many suffer basically from a specific learning disability. There is a strong association between reading retardation and antisocial behaviour. The Bakwins (1972) report a New York study which showed that 76 percent of youthful lawbreakers were two years or over retarded in reading. It is often hard to determine primary causes, as with - the chicken and the egg - but studies by Rutter and Associates (Rutter et al, 1975) have shown that common factors underlie both educational problems and antisocial behaviour. These include parental personality problems, impoverished circumstances and an unsatisfactory school environment, however and I quote "This does not preclude some children becoming delinquent as a maladaptive response to a specific reading handicap". Motivational difficulties associated with the misuse of drugs and alcohol ingestion must not be forgotten when the present day school population show such a high percentage of involvement with both.

Only brief reference can be made to the *developmental deviations* in which maturational lags of varying degree are evident in one or several modalities and may be roughly equated with that unfortunate term minimal brain dysfunction. It has generally been accepted that the associated often very evident emotional disturbances found in these children were resultant to frustration especially in the classroom. This is too simplistic; recognition that the hyperkinetic child is a clinical entity, albeit one that is diagnosed far too often (*Brit. Med. J.*, 1979), suggests that

emotional disturbance may be a primary feature although it must be admitted that by the time many of these unfortunate children reach the psychiatrist, secondary overlays of anger and negativism have developed.

The *psychoses of childhood* offer a very confused area for study bedevilled as they are by conceptual and semantic difficulties. Although the autistic behaviour of the infantile psychotics generally improves with age, language problems tend to persist. Both are of course severe impediments to learning. In later childhood the onset of psychosis may be heralded by an insiduous deterioration in school work - as may childhood depression. Martin was an exceptionally bright 13 year old, but he had always been shy and unduly sensitive. His parents first became concerned over his falling marks, then by his esoteric interests - he would sit for hours reading about ancient Egypt but never seemed to get anywhere. Finally he dug his own grave on a hillside and was found sitting beside it writing poetry which, although it had certain artistic merit, was virtually incomprehensible. His diagnosis was late onset psychosis of childhood - schizophreniform type.

Conclusion

We cannot ignore the importance of motivational factors upon scholastic achievement. Although I have focussed on children over eight years it is apparent that the roots of their disorders lie in early patterns of behaviour in maladaptive life styles and could have been picked sooner. Often by the time psychiatric advice is sought problems are compounded by years of failure in the classroom. The situations I have described are the ones I meet in clinical practice. The early detection of emotional disorder is obviously of greatest importance. I would be most interested to hear how educationalists set about this, for I believe it to be a task beset with serious difficulties. I recently conducted a point-prevalence survey of psychiatric disorder i.e. emotional/behavioural disorder among school children living in remote areas in Queensland's far west. This was based on a survey by Rutter and Associates (Rutter, Tizard and Whitmore, 1970) on the Isle of Wight, England. Our figure for 10 and 11 year old children showing disorder was 7.6%, which is very comparable to that of 6.8% for the English children and sufficiently high to cause concern, since many were functioning well below their potential because of psychological problems. A serious problem in the methodology was the need to use parent questionnaires, not only because of the lack of cooperation (some may feel their admission of disturbance reflects on the quality of care they supply) but because of emotionally determined perceptual distortion. A recent study by Kolvin (Kolvin et al., 1977) describes a screening method for the detection of children at high risk of developing emotional disorder utilizing only the children and their teachers. The multiple criteria screen employed comprises the teacher questionnaire on classroom behaviour (Rutter Scale B) sociometric tests relating to the choice of companions by classmates from which measures of isolation and rejection can be derived, the determination of a reading quotient using the Young Reading Test and a record of absenteeism for trivial reasons. The behaviour questionnaire allows for subdivision into neurotic, antisocial or mixed groups. Using this method, the disturbance rates found by the Kolvin team among 515 seven and eight year old children showed that 6.8% were markedly maladjusted and 33.7% somewhat

maladjusted. Again these are serious figures if one considers the impact such disturbance may have upon classroom performance and eventually vocational choice.

Time does not allow a full consideration of the management of emotionally determined underachievement at school. Measures which free the child from his difficulties and allow him to use abilities creatively include both environmental manipulation and psychotherapeutic help, both individually and in a group setting. Rarely the exhibition of psychoactive drugs may be necessary.

The personality of the teacher and his/her ability to inspire are crucial to a population of children conditioned to the electronic babysitter (the television set). I believe that teacher training courses need more input relative to the psychopathology of childhood and that help must be given to teachers in the understanding of personality transactions during the learning process. Help toward the recognition of childhood mental illness, especially depression, is particularly important. A study of juvenile suicidal behaviour showed that schoolroom apathy and 'giving up' were significant premonitory signs (Connell, 1972, 1977).

The current employment situation, especially as it relates to youth does nothing to improve the motivation to achieve scholastically and generates feelings of helplessness and hopelessness which are permeating downwards among school children. Why work when one's future may be only a dole dependent existence? Urgent measures are needed to counteract this and the voice of educationalists must be heard at Federal Government level.

Can teachers teach motivation? The recent emphasis on the removal of stressful competition from the classroom has I believe, gone too far - or perhaps is too liberally interpreted by inexperienced teachers. Life is competitive today and only experience will help toward a satisfactory life-style. In my study of outback children already described, I was told by teachers from the School of the Air that fostering competitive attitudes among their pupils was essential since many were poorly motivated because they lacked the classroom experience of being able to match their skills against those of their peers. During summer camps help was given in this respect by exposure to group learning. This type of experience does improve motivation to achieve and can be used generally. The judicious exposure to competitive situations when teacher, psychologist, child psychiatrist and often parents work as a team with the child's interests as a paramount concern can and does help the poorly motivated child.

Follow up studies show a relatively good prognosis for neurotically disturbed children (Robins, 1966; Mellsop, 1972; Rutter, 1972) in terms of personality functioning; but if educational failure compounds the picture this residue may be persistent and never resolved. It is certainly not too late at eight to help a child with emotional disorder psychiatrically speaking, but if he is already negatively conditioned to classroom experience he may well have started on the vicious spiral of educational drop-out. Far too many intelligent children are lost to the creative work that befits their potential because of motivational/emotional problems.

In a society where family disruption is common (in 1976 63,230 petitions were granted for divorce, and these involved 73,500 children), stress is mounting and emotional disorders are on the increase. It is essential that consideration be given to children at risk of emotional abuse. Child psychiatry by no means has all the answers but the involvement of children's psychiatrists with schools needs to be far greater than at present obtains if the emotionally disturbed child is to be given the help he deserves.

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AN AUSTRALIAN DEVELOPMENTAL SCREENING RECORD: THE DEVELOPMENTAL RECORD FOR INFANTS AND YOUNG CHILDREN (DRIYC)

Barry E. Burdon

INTRODUCTION

There has been an increasing emphasis in recent years on the development and implementation of coordinated approaches to the early detection of disease, psychological handicap and developmental delay. This emphasis on early development is based on the assumption that treatment at a stage before symptoms have appeared offers the best chance of preventing, or at least modifying the deleterious effect of the disease or the handicapping or psychologically disadvantaging condition. This effort is found not only in early intervention programs but in community medicine, education and pediatrics (Bower, 1978; Frankenburg and Camp, 1975; Meier, 1973; Sparrow, 1974; U.S. Department of Health, Education and Welfare, 1972).

There are in Australia, as elsewhere fairly significant groups in the population whose children are "at risk" in relation to health and psychological development (Winefield and Moss, 1975; Murrell and Moss, 1976). As well, the recent expansion in day care and early childhood services has meant that increasing numbers of very young children are being cared for, for considerable periods of their waking day, by adults other than those who are their primary caregivers or biological parents. In this situation it is considered that some fairly regular monitoring of the developmental progress of each child is essential and should not be left to chance.

The psychological assessment of young children by strangers is difficult especially when the child's cooperation and attention are required. On the other hand those people who care for the children, who know a good deal about each individual child and who are familiar to the children and who have their confidence are usually not trained to administer and interpret psychological tests. There is another problem too in that most of those tests are expensive in both time and financial cost and are too detailed to serve a broad screening function.

An alternative approach to early detection of developmental delay is that which is now usually referred to as "developmental screening" (Meier, 1973). At its most elementary level this process is designed to detect developmental lag or delay only in its broadest or coarse grained sense. If delay in development is detected or suspected as the result of this screening then more expert assessment and diagnosis is called for. Developmental screening tests are not designed to make a specific diagnosis or assessment.

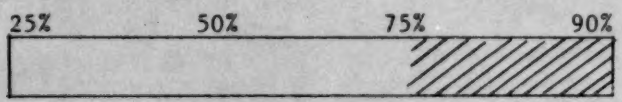
A broad based developmental screening record should meet a number of criteria which include high levels of reliability and validity, a sound theoretical basis, well established norms of behaviour, simplicity and ease

of administration, recording and interpretation, and economy both of administration and cost. This paper reports on the development of a screening instrument which could fulfil these criteria and which could be used by people who though not trained in formal test administration would be working with and know the children being assessed.

Description of the DRIYC

The Developmental Record for Infants and Young Children has been devised to provide a method of discovering early developmental lag or delay. The information which is recorded is not gained in a test type context but from observing the children in a number of day to day situations.

The DRIYC record sheet itself consists of a number of bars or rectangles. Each of these represents an item of behaviour or a skill which children develop during a certain age range. In most cases these "behaviour items" are represented as follows:



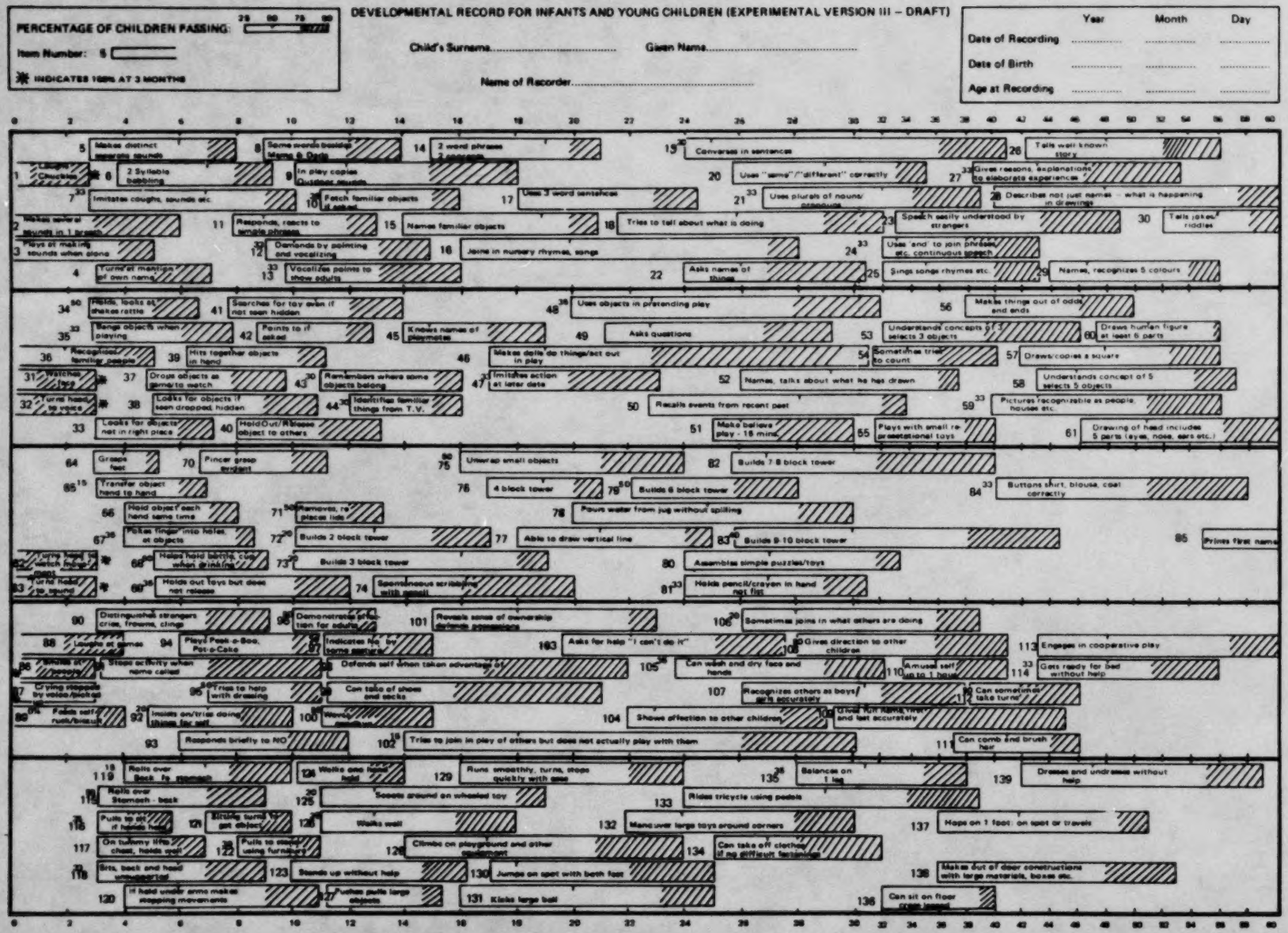
This bar indicates the age (read in months from the top or bottom of the DRIYC sheet) by which respectively 25%, 50%, 75% and 90% of most children have acquired or developed that behaviour.

A child is observed and judged only in the behaviours which are appropriate for his age and *not* on *all* of the items on the sheet. When a child's age has been worked out (in months) a line is drawn vertically through the DRIYC sheet using the age numbers at the top and bottom as guidelines. The child is then judged only on those items (i.e. bars or rectangles) which are adjacent to the age line.

Overall assessment is then made about the child's development according to whether he is coping with most of the behaviours which are appropriate for his age. If there are too many gaps or delays then it is suggested that the child is referred for more specialized assessment or diagnosis with a view to intervening in some appropriate manner before "problems" compound and cause greater difficulty later in life.

Methodology and Program of Test Development

A research grant which was made available by the Australian Government through the Advisory Committee on Child Care Research enabled the Developmental Record Research Project to be commenced early in 1974. This description follows in chronological sequence the test development program.


PERCENTAGE OF CHILDREN PASSING:
25 50 75 90
Item Number: 5
INDICATES 100% AT 3 MONTHS
DEVELOPMENTAL RECORD FOR INFANTS AND YOUNG CHILDREN (EXPERIMENTAL VERSION III – DRAFT)
Child's Surname.....
Given Name.....
Name of Recorder.....
Year Month Day
Date of Recording
Date of Birth
Age at Recording
LANGUAGE
COGNITIVE-ADAPTIVE
FINE MOTOR
PERSONAL SOCIAL
GROSS MOTOR
Makes distinct repeated sounds
Some words besides Mama & Dada
2 word phrases 2 concepts
Converses in sentences
Tells well known story
Laughs / Chuckles
2 Syllable babbling
In play copies Combines vowels
Uses "same"/"different" correctly
Gives reasons, explanations to elaborate experiences
Imitates coughs, sounds etc.
Fetch familiar objects if asked
Uses 3 word sentences
Uses plurals of nouns/ pronouns
Describes not just names – what is happening in drawings
Makes several sounds in 1 breath
Responds, reacts to simple phrases
Names familiar objects
Tries to tell about what is doing
Speech easily understood by strangers
Tells jokes/ riddles
Plays at making sounds when alone
Demands by pointing and vocalizing
Joins in nursery rhymes, songs
Uses 'and' to join phrases etc. continuous speech
Turns at mention of own name
Vocalizes points to show adults
Asks names of things
Sings songs rhymes etc.
Names, recognizes 5 colours
Holds, looks at shakes rattle
Searches for toy when if not seen hidden
Uses objects in pretending play
Makes things out of odds and ends
Bangs objects when playing
Points to if asked
Knows names of playmates
Asks questions
Understands concepts of 3 selects 3 objects
Draws human figure at least 6 parts
Recognizes familiar people
Hits together objects in hand
Makes dolls do things/act out in play
Sometimes tries to count
Draws/copies a square
Watches
Drops objects as game to watch
Remembers where some objects belong
Imitates action at later date
Names, talks about what he has drawn
Understands concept of 5 selects 5 objects
Turns head to voice
Looks for objects if seen dropped, hidden
Identifies familiar things from T.V.
Recalls events from recent past
Pictures recognizable as people, houses etc.
Looks for objects not in right place
Hold Out/Release object to others
Make believe play - 18 mins.
Plays with small re-presentational toys
Drawing of head includes 5 parts (eyes, nose, ears etc.)
Grasps feet
Pincer grasp evident
Unwraps small objects
Builds 7-8 block tower
Transfer object hand to hand
4 block tower
Builds 6 block tower
Buttons shirt, blouse, coat correctly
Hold object each hand same time
Removes, replaces lids
Pours water from jug without spilling
Pokes finger into holes at objects
Builds 2 block tower
Able to draw vertical line
Builds 9-10 block tower
Prints first name
Turns head to watch things
Holds bottle, cup when drinking
Builds 3 block tower
Assembles simple puzzles/toys
Turns head to sound
Holds out toys but does not release
Spontaneous scribbling with pencil
Holds pencil/crayon in hand not fist
Distinguishes strangers cries, frowns, clings
Demonstrates affection for adults
Reveals sense of ownership defends possessions
Sometimes joins in what others are doing
Laughs at games
Plays Peek-a-Boo, Pat-a-Cake
Indicates No by some gesture
Asks for help "I can't do it"
Gives direction to other children
Engages in cooperative play
Shows joy/ pleasure
Stops activity when name called
Defends self when taken advantage of
Can wash and dry face and hands
Amuses self up to 1 hour
Gets ready for bed without help
Crying stopped by voice/ tickles
Tries to help with dressing
Can take off shoes and socks
Recognizes others as boys/ girls accurately
Can sometimes take turns
Feeds self fruit/ biscuit
Insists on/tries doing things for self
Worries
Shows affection to other children
Dried for hands invert and last accurately
Responds briefly to NO
Tries to join in play of others but does not actually play with them
Can comb and brush hair
Rolls over back to stomach
Walks one hand held
Runs smoothly, turns, stops quickly with ease
Balances on 1 leg
Dresses and undresses without help
Rolls over Stomach - back
Scoots around on wheeled toy
Rides tricycle using pedals
Pulls to sit if holds head
Stands turns get object
Walks well
Manoeuvre large toys around corners
Hops on 1 foot on spot or travels
On tummy lifts chest, holds well
Pulls to stand using furniture
Climbs on playground and other apparatus
Can take off clothes if no difficult fastenings
Sits, back and head unsupported
Stands up without help
Jumps on spot with both feet
Makes out of door constructions with large materials, boxes etc.
If held under arms makes stepping movements
Pushes pulls large objects
Kicks large ball
Can sit on floor cross legged

Review of Tests and Measures of Development

Over eighty developmental and preschool tests, both published and unpublished were evaluated in some detail in the early stages of the study. Other tests and measures were considered during the course of the study bringing the total number to over one hundred. This review had the dual purpose not only of checking whether any existing measure fulfilled adequately the requirements just mentioned but also of contributing likely age-related behaviour items to the pool from which final selection was made.

Literature Review

The review of literature relating to infant and early child development focussed on primary sources published since 1969 as it was considered that much of the earlier theorizing and research was available in secondary sources. These were checked for leads in the areas of developmental theories, behavioural correlates of development, and instrument and item development. Theoretical views were also studied to provide a theoretical framework for the instrument and ideas for the development of behavioural items for the item pool. These views include especially the work of Piaget (1952, 1953, 1955, 1967, 1969), Kagan (1974, 1976) and Gessell (1949).

Theoretical Framework

A comprehensive conceptual framework encompassing all areas of human development has yet to be elaborated. A Piagetian focus was adopted as offering a useful conceptual perspective, not only for cognitive abilities but also for aspects of the child's social and even emotional development. Motor development lies outside this conceptual framework but the course of fine and gross motor development have been well documented by Gessell and this was used as a guideline in the study. A number of investigators (Kagan, 1974; Lewis and Rosenblum, 1974, 1975) have more recently attempted to link aspects of affect display with unfolding cognitive capacities such as object permanence, memory, expectancy function and the activation of hypotheses and these support the decision to adopt a cognitive based theoretical perspective.

Establishment of a Pool of Age-related Items Describing Behaviour

An extensive pool of items describing age related behaviours was built up from a consideration of existing tests and measures from the theoretical and research literature reviewed and in some cases by devising statements of behaviour from a consideration of theoretical writings and research studies.

These descriptors or behavioural items were charted to show an age range during which the particular behaviour was typically observed or could be expected to occur in most competently functioning young children. Over 1000 of these items were charted at one month age intervals for the 1 to 48 months age range. This age range was later extended to 60 months and the "lower" end of the scale was lifted to 3 months.

Refinement of Item Pool

When the charting of these items had been completed the item pool was then refined and a selection of items was made. This selection and

culling was made on the basis of -

i) the observability of the behaviour in normal or natural environmental settings. This means that it would not be necessary for the observer to have to deliberately set about to elicit the behaviour;

ii) consensus for inclusion, i.e. the item had some apparent face validity in being included in at least two other measures or tests. As well some especially developed items were also included;

iii) "fit" within the theoretical framework;

iv) conceptualization, i.e. the item was indicative of some aspect of psychological or physiological development or the dynamics of these developments.

This reduced the number of items available for field testing to just under 500.

Field Trials and Revision of Item Pool

The initial field trial was conducted in two phases, the first was a fairly informal process which in fact had paralleled much of the latter part of the item development phase. The research assistant and the chief investigator spent a good deal of time at two day care centres observing children and discussing many of the behavioural items with staff. These discussions included the prevalence of items in the day to day behaviours of the children, the ease of observability of these behaviours, the utility of certain items, the clarity of the statement of items, and the design and layout of proposed formats. As a result of this experience the statement and description of a number of items were modified.

Field Testing of Items

This phase of the study was in effect a more formal extension of the initial field trial just described. Visits were made to a number of day care centres, preschools and individual homes throughout the Adelaide metropolitan area. Information was collected for 220 children distributed fairly evenly through the age range of 3 to 60 months. This sample cannot be considered as being either representative or random but at this stage no norming of items was being attempted. On the basis of this information summary statements concerning the appropriateness, utility, clarity and representativeness of each item were prepared to guide the selection of items for the norming study.

Format

It has always been the intention to devise a format of one, or at the most, a doubled paged sheet. This would enable behaviours to be checked off directly and an immediate summary or profile obtained, thus eliminating the two step process required in most of the other tests

which had been reviewed. It had become apparent from the tests reviewed that the format which came closest to the needs of this project was that used for the Denver Developmental Screening Test (DDST) (Frankenburg, Dodds and Fandel, 1973). In this test there is an indication of the developmental norm for each behaviour which is then checked directly on the profile sheet so eliminating a two step process. A profile is readily available and the area of developmental lag is highlighted immediately. Not only is the area of the delay identified but some indication of the extent of such delay may also be obtained.

The decision to adopt this format had certain immediate influences on the subsequent course of the project because such a format limited the number of items that could be included. This factor and the spread of the record over a five year age range demanded that each of the items selected for inclusion be a particularly valid indicator or descriptor of some significant aspect of development or of some developmental process. It was decided to vary the DDST format by separating behaviour items into five (rather than four) categories to give more stress to cognitive development than was apparent in that test. The investigators considered that this had been underplayed by Frankenburg and his colleagues. The five domains decided on were labelled Language, Cognitive-Adaptive, Fine Motor, Personal-Social and Gross Motor.

Selection of Items for Norming

Of the 500 items remaining in the pool, 271 were selected for norming. This selection was influenced by a number of factors including the particular format which had been adopted, the underlying theoretical basis, and the requirement that items be assessed by observation and not by testing. Every attempt was made to include an adequate number of items through the age ranges for each domain (i.e. horizontally) and at the same time ensure that each age was adequately covered in each of the five domains (i.e. vertically). This was done by drawing up large charts to simulate the eventual format and pencilling in items (with, at that stage, hypothetical ranges of frequency) to ensure adequate cover.

Establishing Age Norms for the Behaviour Items

In order to establish viable and useable age ranges for each item (i.e. the proportion of the population displaying that behaviour at a particular age) it was necessary to obtain data from as representative a sample of the population as possible. This could not be obtained by sampling infant health service, day care centre and kindergarten populations as had been done in the early stages of the study and a more systematic approach was required.

(i) *The Sample :* Assistance was requested from the Commonwealth Bureau of Statistics who suggested that given the resources available and the nature of the task the best approach would be to obtain data on all children living in a range of population blocks in Metropolitan Adelaide. The Bureau selected population blocks and suburbs which would give a spread (but not necessarily a representative sample) of the population through a range of geographic areas and with respect to socio-economic status. It was decided to avoid high ethnic population areas because of the limited language facility of the project team.

Data was collected on 625 subjects: however 34 of these were rejected because of some severe developmental problem, extended periods of hospitalization or sickness, prematurity or incomplete data. This meant that data was available for 591 children distributed through the age range 3 to 60 months and across a number of suburbs which ranged through the rankings for socio-economic status. This distribution across SES is presented in Table 1.

Table 1

Norming Sample Distributed by SES Area

SES Area	N.	%
1	127	21.5
2	112	19.0
3	112	19.0
4	99	16.8
5	113	19.1
Not known	28	4.6
Total	591	100.0

Data obtained for parental occupation (Table 2) gives the impression that the norming sample is "middle-heavy" and slightly under-represented at either extreme i.e. in rankings 1, 2 and 7.

Table 2

Norming Sample Distributed by Parental Occupation

Occupational Ranking *	N.	%
1. Professional and Senior Business	29	4.8
2. Professional/Senior Managerial	24	4.1
3. Sub-professional/Managerial/Accountant	64	10.8
4. Teacher/Small business/Office/Bank	157	26.7
5. Clerical/Sales/Service/Skilled Trade	181	30.5
6. Shop assistant/Semi-skilled Transport	86	14.6
7. Unskilled	20	3.4
Not known	30	5.1
Total	591	100.0

** Occupation ranking based on Congalton (1969)*

The sample contains slightly more parents born in the United Kingdom in comparison with the 1971 census figures and fewer Greek and Italian born parents. This is an artifact of the sample selection procedure and

reflects the deliberate policy of avoiding problems associated with language difference. The project did not have the resources available to interview and translate in a variety of non-English languages and because the study was dealing with developmental universals rather than child rearing practices the investigators considered that it was not really necessary to sample the various language groups.

(ii) *Data Collection Procedures* : Our experience during 1974 had shown that observers who do not know a child particularly well may take a considerable amount of time to collect specific data by direct observation alone. In order to avoid this problem it was decided to collect the required data by interviewing the parent(s) of each child in the sample. A structured interview/ questionnaire was developed for this purpose and scoring protocol devised. A number of trial interviews were conducted and some minor modifications were made before the questionnaire was finalized. The questions and probes were devised in an attempt to avoid leading the responder to a "desired" or "acceptable" answer. Two interviewers (both with previous interviewing experience) were employed for this phase of the project and joined with the project team for a four day program of training in the use of the questionnaire.

Once the data collection had commenced the interview team met regularly to check their administration, scoring and coding procedures and to tally successful contacts and interviews in the population blocks. Each interview form was rechecked for correct coding and completion. Detailed comments were written about each item in relation to its apparent viability, discriminative ability and utility as an "observation based" test item. When the interviewing was completed the team met for a two day debriefing and each interviewer wrote extensive notes on the items.

(iii) *Data Processing* : When all questionnaires had been rechecked the data was analysed. This analysis arranged the data for each item by age progression and number and cumulative percentage of response type. The data display made it possible to identify behaviour items which showed a developmental sequence from their onset to a point (an age) when most children in the age group displayed that behaviour. This allowed for the establishment of acceptable age-ranges within which the appearance of particular behaviours could be considered "normal".

Item Selection and Trial Format

A total of 116 items which displayed some developmental progression and which could be included in the format design were selected from the original 271 items for which data were collected. These items indicate the progression through time (or age) from the point when very few children display that behaviour to the age when most children are able to do so. Most items start at the time when about 25% of children display that behaviour and show regular progression through 50%, and 75% to the time (age) when 90% of children are able to perform or have developed that skill. A trial format and the draft of an administration guide were prepared at this time and named the Experimental Version of the Developmental Record for Infants and Young Children (DRIYC). Further trialling and refinement of the format and the guide were undertaken in the U.S.A. in 1976-77.

Reliability Studies

Test-retest and inter-rater reliability were examined in this phase of the project. The results obtained indicated that the DRIYC has acceptable levels of reliability (Test-retest 0.895 and Inter-rater 0.812). An unexpected lower correlation value of the inter-rater study (0.812) reflects some disagreement between raters on three of the forty two ratings which could be explained by the conduct of this part of the study. Data was collected in a three day observation period by the investigator who had very little acquaintance with the children, and a research assistant who had spent an extended period in the Centre and who was well acquainted with most of the children. The three "disagree" classifications out of 42 ratings were all in the same direction of the investigator tending to be more lenient in his judgement.

These studies which were the first field trials of the Developmental Record provided encouraging indications of reasonably high inter-rater and test-retest stability and reliability. As well they highlighted areas where further refinements were required, in particular where additional items were required in some areas of the Developmental Record format. Twenty new items were added to or reordered on the format sheet.

Validity Study

In order to establish the concurrent validity of the Developmental Record, i.e. its ability to correctly identify both normal and developmentally delayed subjects, the correspondence between DRIYC ratings of "Delayed", "Questionable", and "Satisfactory" with developmental and intelligence quotients obtained by using the Bayley Scales of Infant Development (BSID) or the McCarthy Scales of Childrens Abilities (MSCA) to rate these same children was investigated. An acceptable level of validity (0.787 with the Motor Scale and 0.737 with the Mental Scale of the Bayley Scales of Infant Development) was obtained.

The most striking feature of the results was the indication that the lowest scale score range which the DRIYC classifed as "Satisfactory" was 80-89 (the actual scores were 84 for the GCI and 89 and 84 for the same child on the MDI and PDI scales of the Bayley). This meant that the DRIYC correctly identified as Developmentally Delayed *all* children in the sample who had scale scores of <84.

The correlation coefficient results obtained in the validity study although not as definitive as had been anticipated, indicate that the Developmental Record for Infants and Young Children is, when used in field situations as designed, able to identify and isolate children who had some displayed developmental delay as indicated by low criterion test scores.

Conclusions

These reliability and validity analyses support the claim that the DRIYC can be used to identify accurately developmental delay in young

children. There is strong evidence to show that the Developmental Record has high concurrent validity, especially in view of its ability to identify even minor deviations in development.

This validity study also supports the contention that the DRIYC is quick, efficient and easy to use. It is observation based, has acceptable levels of reliability and does not require a formal face-to-face test administration. Personnel can be trained in the use of the DRIYC in approximately 40 minutes with a 10 minute follow up session after two trial administrations. This also adds to the other qualities of the Record in not being demanding of time, space and special equipment and the further advantage of being reuseable and showing at a glance how the child is developing from one time to another.

There is increasing interest in implementing periodic health and developmental screening programmes in Australia. It is felt that the Developmental Record for Infants and Young Children which has been described here can play a significant role in projects of this kind. A final recommendation is that because the present title of the instrument is rather cumbersome a more appropriate name would be *The Australian Child Development Record.*

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Footnote: *Full details of the reliability and validity studies were presented in this paper at the Conference. However, space does not permit their inclusion in this publication.*

TRAINING PARENTS AS REMEDIAL READING TUTORS

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Involving parents in programmes to improve children's educational achievement has gained widespread acceptance, particularly as a means of upward mobility for children from underprivileged homes (Chilman, 1976). There is abundant evidence that parents can be trained to modify problem social behaviour in their own children (e.g. O'Dell, 1974). The basic approach has been one in which a therapist actively and directly trains parents (typically mothers) in an operant approach to contingency management, in order to reduce maladaptive behaviour in the home. Graziano (1977) reports a recent shift in such parent training programmes from a concern with single problems and relatively simple issues to a concern with more severe problems involving complex social interaction (e.g. school phobia and language and speech disorders).

Despite this newer concern with complex behaviours, there is scant evidence of effective parent modification of children's academic behaviour. Studies involving parents in programmes to improve academic performance of their own children have often restricted the role of the parent to that of a home-based agent of reinforcement (e.g. Bailey Wolf & Phillips, 1970; Hawkins Slayter & Smith, 1972). In these studies parents administer reinforcers contingent on their children's performance on academic tasks at school. While clearly effective in improving children's school performance, such procedures do little to involve parents in the direct tutoring of academic behaviour. Home-based reinforcement procedures on their own do not increase parents' competence in assisting children with learning problems.

Chilman (1976) reviewed ten parent education projects, which featured parents in the role of tutors, generally concerned with providing cognitive stimulation for their pre-school children. Chilman's review indicates that such projects lacked sufficient objective outcome data on child behaviour and achievement and on parents' implementing of tutoring programmes. As a result, clear evaluation of programme success, or even evaluation of programme implementation is not possible. Data on mothers' performance of target tutoring skills were not available. Loeber and Weisman (1976) in the context of therapist training argue that data on trainer responding (as well as on trainee responding) must be collected "...thus taking into account the fact that the main tools of behaviour modification are responses emitted by trainers and therapists". Graziano (1977) also criticizes current behavioural research on parent modification of child behaviour for its lack of data on parent behaviour change. Existing studies concentrate on presenting data only in terms of child behaviour outcome. Without data to show whether parents correctly implemented all components of a treatment programme, it is difficult to interpret either positive or negative child behaviour outcomes. If a positive child behaviour outcome results it is

always possible that parents have not implemented a treatment programme, but that other non-specific variables uncontrolled by the research design may be responsible for child behaviour change. Also, a negative outcome may represent *either* that the therapeutic programme was ineffective or that parents did not implement the programme.

Behavioural studies have been criticized also for the lack of data on generality of child behaviour change. Forehand and Atkeson (1977) note that most experimenters have assumed parent behaviour change has produced or at least been associated with generality of child behaviour change. This implies generalized child behaviour change is a function of generalized parent behaviour change. Parent behaviour in generalization settings has not often been measured. Forehand and Atkeson also note that child behaviour change from home to school is the area in which the least compelling evidence on generality is available. They urge that research attention should now be directed towards discovering what are the most effective and efficient methods for implementing generality across these settings.

However, the theoretical significance of data on generalization of child behaviour change across time across behaviours or across settings is limited unless it is demonstrated that target parent behaviours generalize also. In the case of parent home tutoring programmes, research needs to (1) specify particular component tutoring behaviours, (2) determine whether parents display any of these behaviours prior to undergoing a training programme, (3) demonstrate gains in these tutoring behaviours as a result of the training by therapists, (4) demonstrate that parents can maintain the newly acquired tutoring behaviours independent of the therapist, and (5) demonstrate that child behaviour gains at home (e.g. improvement in reading) generalize to school.

Recent research in oral reading interaction stresses the importance of the one-to-one (instructor and student) setting for the acquisition and practice of behavioural strategies for proficient reading, particularly when regular classroom instructional programmes have failed (Glynn & McNaughton, 1975; McNaughton & Delquadri, 1978). Proficient reading has been seen as learning to attend accurately to both graphic and contextual cues, to integrate responding to those cues, to become efficient by using the most informative of those cues, and finally to become independent and self-instructing, partially through learning to self-correct (Clay, 1972; Day, 1975; Doehring, 1976; La Berge & Samuels, 1974; McNaughton, 1978). McNaughton and Glynn (1979) suggest the behaviour of the instructor in the one-to-one context may be crucial in determining whether the reader learns independent error correction strategies or learns merely to be more dependent on the instructor for error detection and error corrections.

Previous research with teacher and paraprofessional tutoring of oral reading permitted the specification of the tutor behaviour components examined in this study (Glynn & McNaughton, 1975; McNaughton & Delquadri, 1978; McNaughton & Glynn, 1979). These tutor components are (1) delaying the timing of tutor attention to errors, (2) providing contextual syntactic or graphophonic prompts contingent on errors, rather than simply modelling or "telling" the child the correct word, and (3) providing praise contingent on: (a) correct performance (e.g. sentences or pages read correctly, (b) self-correction of errors, and (c) error correction following a prompt. A fuller theoretical rationale for the selection of these tutor behaviours is provided in McNaughton (1978).

Research on the training of institutional staff to modify the attention to inappropriate child behaviour has established that merely providing instructions or theoretical lessons is clearly ineffective (Goodwin, 1966; Cossairt, Hall & Hopkins, 1973; Saurdagas, 1973). Johnson (1978) reports a staff training programme in which theoretical lessons practice, and performance feedback were introduced in a sequential components design. The major changes in staff behaviour were associated with the introduction of practice and feedback components, rather than with theoretical lessons.

Providing parents with explicit training in reading tutoring rather than allowing them only a teacher support role seemed to run counter to advice and concern expressed by some teachers. These teachers believed that involving parents in the home context is a risky procedure. Parents might put children under undue stress, and, because of lack of knowledge of reading teaching procedures, might be over punitive and end up doing more harm than good, perhaps undermining school reading programmes. On the other hand, for the particular children in this study, the authors decided that existing school programmes were not operating effectively. Class teachers and remedial teachers were unable to devote much time to the individual work necessary with these "hard core" reading problem children. Further, in all cases, parents were sufficiently concerned about the child's reading failure to be keen to take part in the intensive programme proposed. Parents, too, undoubtedly have more time to spend with a particular child, than teachers responsible for whole classes. Whether parents would place too much stress on their children was seen as an empirical question, which could be answered from baseline data, prior to beginning a training programme.

Method

Tutors and Children

Eight adult tutors, five pakeha, three Maori, participated in the study. Seven were mothers tutoring their own sons, and one was an aunt tutoring a nephew in her care. All tutors were referred either by New Zealand Department of Education Psychological Service or by school remedial reading personnel. All children were referred because of minimal reading progress since school entry at the age of five.

The eight tutors had families from two to five children, and resided in a low-cost State-financed housing area. All families included an adult male who worked full-time, and several tutors themselves had part-time or full-time jobs. All tutors had previously contacted the schools because of their concern about the low progress of their child. In all cases the schools had been unable to provide concrete assistance to enable parents to help their child with reading.

Following an approach by the Department of Education Psychologists, potential tutors were referred to the authors, and interviewed in their home. At this interview the authors described the aims of the study and explained that involvement of a family in the study would require two home visits per week by two of the authors for ten to fifteen weeks. Potential

tutors were also informed that they would need to carry out and tape record one or two additional sessions each week. All of the first eight potential tutors interviewed expressed their willingness to carry out the full tutoring programme.

The children were aged between eight and twelve years (mean, 9 years 7 months). They had between two years four months and five years reading deficit as measured on a criterion-referenced procedure devised for this study. Trained assistants administered 50-word passages of material selected from two sets of sequenced texts used in the school reading programmes. The highest book level which children could read accurately (90% or better of words read initially correct) was identified, and the recommended reading age for this book was noted.

Setting

All tutoring took place in the tutors' own homes at times selected by tutors. Two sessions per week were conducted during school hours, so that the tutors could meet with the fourth author without their child being present. Tutors typically conducted the sessions in the kitchen or lounge often at the family dining table. Normal family activities continued while tutoring went on - e.g. tutors had to deal with demands of other siblings and answer telephones, as necessary. The television was frequently turned on, in an adjacent room. Tutors were instructed to seat the child beside them, with the reading book between the two of them, to avoid unnecessary eye contact, but to allow both tutor and child a clear view of the text.

Experimental Design

The design employed was a multiple baseline across subjects design (Hersen & Barlow, 1976). Following baseline conditions of varying number of sessions, the training programme was successively introduced to different tutors. All four components of the programme were introduced concurrently. This allowed the assessment of the effects of training to be examined, with some measure of control over extraneous variables such as historical events (Campbell & Stanley, 1968). The design also included a further elaboration to test the generalization of tutoring behaviour from sessions in which the therapist (one of the authors) was present to sessions where the therapist was absent. After the training programme began, approximately half the tutoring sessions (one per week) were conducted and recorded in the presence of the therapist who gave feedback at the end of the session. The remainder of the sessions were conducted and recorded by the tutor without the therapist being present. (One of these additional taped sessions was used for feedback to the tutor by the fourth author when the child was at school). Therapist absent sessions followed each therapist present session, and at least one of each type of session occurred every week. Tutor behaviour was analysed by comparing baseline levels with training levels (therapist present) and generalization levels (therapist absent). Therapists were present during all baseline tutoring sessions. Session by session data on child and tutor

behaviour within the multiple baseline design are reported in Glynn, McNaughton, Robinson and Quinn (1980). This paper presents summary data only, in terms of comparisons across baseline, and training (both therapist present and therapist absent) conditions.

Measures of Tutor Behaviour

(a) Total Error Attention. This was a measure of the percent of child errors which received some form of attention from the tutor. Every error, (except those which were self-corrected by the child) represented an opportunity for tutor attention. The Total Error Attention measure permitted comparisons of changes in the proportion of child errors attended to between baseline and training conditions, and between therapist present and therapist absent conditions.

(b) Percentage Delay. This was a measure of the timing of tutor response to reading errors. Any instance of an interval of five seconds or more between a child error and tutor response of any kind was scored as delayed attention. This applied whether or not the child continued reading after the error. Instances of tutor intervention within the five-second limit were scored as immediate attention to error. The Percentage Delay score for a given tutor in a reading session was the percentage of instances of the total tutor error attention that were scored as delayed (rather than immediate).

(c) Percentage Prompts. This was a measure of the type of tutor response to a child's reading error. Prompts were scored as any instance of a tutor responding to an error with a clue or hint about the meaning of the word or with a direction to look at the context of the story, or at the grapho-phonic features of a word. In contrast, instances of a tutor responding to an error by directly telling the child the correct word, were scored as models. The Percentage Prompt score for a given tutor in a reading session was the percentage of instances of the total tutor error attention that were scored as prompts. The measure takes into account that more than one prompt or model may occur for a single error.

(d) Percentage Prompted Correct. This was a measure focussing on child errors for which tutor attention had included a prompt. The percentage Prompted Correct referred to the percentage of these prompts which resulted in the child successfully correcting the error. The measure thus excludes (1) errors not attended to by tutor; (2) errors receiving a model without a prompt and (3) errors receiving a prompt that did not lead to successful error correction.

(e) Praise. There were three measures of tutor praise, all were designed to examine tutor praise for independent reading.

i) *Praise for Self Corrections.* This was a tally of the number of statements per session which were contingent on child self-correction of an error, and which explicitly stated that: e.g. "Good boy, you corrected that mistake all by yourself I didn't have to tell you".

ii) *Praise for Prompted Corrections.* This was a tally of the number of tutor praise statements per session which were contingent on a child's correct response following a tutor prompt. These statements also involved an explicit statement, e.g. "Good. You got that right when I gave you a clue".

iii) *Praise for Other Responses.* This was a tally of the number of other tutor praise statements per session. These included praise contingent on the error-free reading of a whole sentence, page or passage, or general praise statements referring to the whole session, e.g. "Good. You read that whole page correctly". That's really good reading today, Len".

Measures of Child Behaviour

The major reading outcome measures were conducted at school by independent observers (graduate students) who were naive about the specific components of the home tutoring programme. The same measures were taken of children's home reading, though the texts used were different from those used to assess progress at school. Measures of reading accuracy and self-correction were computed from home reading data mainly to monitor the difficulty level of home reading texts. For assessment of reading at school a reading accuracy score of 90% or better was the criterion for promotion to a more difficult text. This was adhered to so that a measure of rate of progress through reading book levels could be obtained. However, for home reading the criterion was used much more flexibly - a therapist could decide to maintain several tutoring sessions on a particular text to the child and tutor to complete a story, even if the reading accuracy at times exceeded 90%.

(a) Reading Accuracy. This was a measure of the percent of words read initially correctly in each session, calculated from the formula:

$$\frac{\text{total words read} - \text{errors}}{\text{total words read}} \times \frac{100}{1}\%$$

Errors were defined as any mismatch between a text word and an oral response.

An Omission or Non-Attempt Error occurred when one, or more of the usual graphophonic elements of the correctly read word were missing.

A Substitution or Addition Error occurred when, one or more graphophonic elements were added which were not a part of the text. Deviations in usual pronunciation, intonation or emphasis were not counted as errors. Errors which were self-corrected were included in the total error count.

(b) Percent Errors Self Corrected. Self-corrections were defined as spontaneous independent corrections by the child without tutor attention to the error. Self-corrections occurred when a text word was missed out or read partially or wholly incorrectly and then was corrected by the reader returning to that point of the text containing the error, and re-reading correctly.

Successive attempts to self-correct the same error did not count as separate self-corrections. Percent errors self-corrected this was calculated from the formula:

$$\frac{\text{self corrections}}{\text{errors}} \times \frac{100}{1} \%$$

Observation Procedure

All sessions were taped and scored by graduate student observers who used a special record sheet to tally all categories of tutor and child behaviour. Observers did not know the children or families involved in the study, and were naive about the details of the experimental design. Observers were trained by the fourth author with both a written manual, comprising definitions and examples of target child and tutor behaviour and a series of three demonstration tapes with written transcripts of tutor-child verbal interaction.

Reliability of Observation

The eight tutor-child pairs conducted a total of 192 home reading sessions, (mean 24, range 17 to 31 sessions), across the study. Reliability data were obtained from 27 tapes from seven of the eight pairs. The average percentage of tapes analysed for reliability purposes was 14.3% (range 9% to 29%). Reliability data were calculated by having a second observer score the tapes. The frequency counts of the two observers for each class of child and tutor behaviour were compared using the formula:

$$\frac{\text{smaller total}}{\text{larger total}} \times \frac{100}{1} \%$$

Tutor Training Procedure

The programme of tutor training emphasized providing opportunities for the child to gain independent problem solving skills in reading, rather than to become increasingly dependent on the tutor for assistance. Further details and information about the programme as presented to parents are presented elsewhere (Glynn, McNaughton, Robinson & Quinn, 1979). The procedure embodied three components.

(1) Written Instruction Sheet. A simple diagram was prepared, containing ten statements of what a tutor should do to assist a reader learning to read. Figure 1 illustrates these statements, and the sequence in which they were presented.

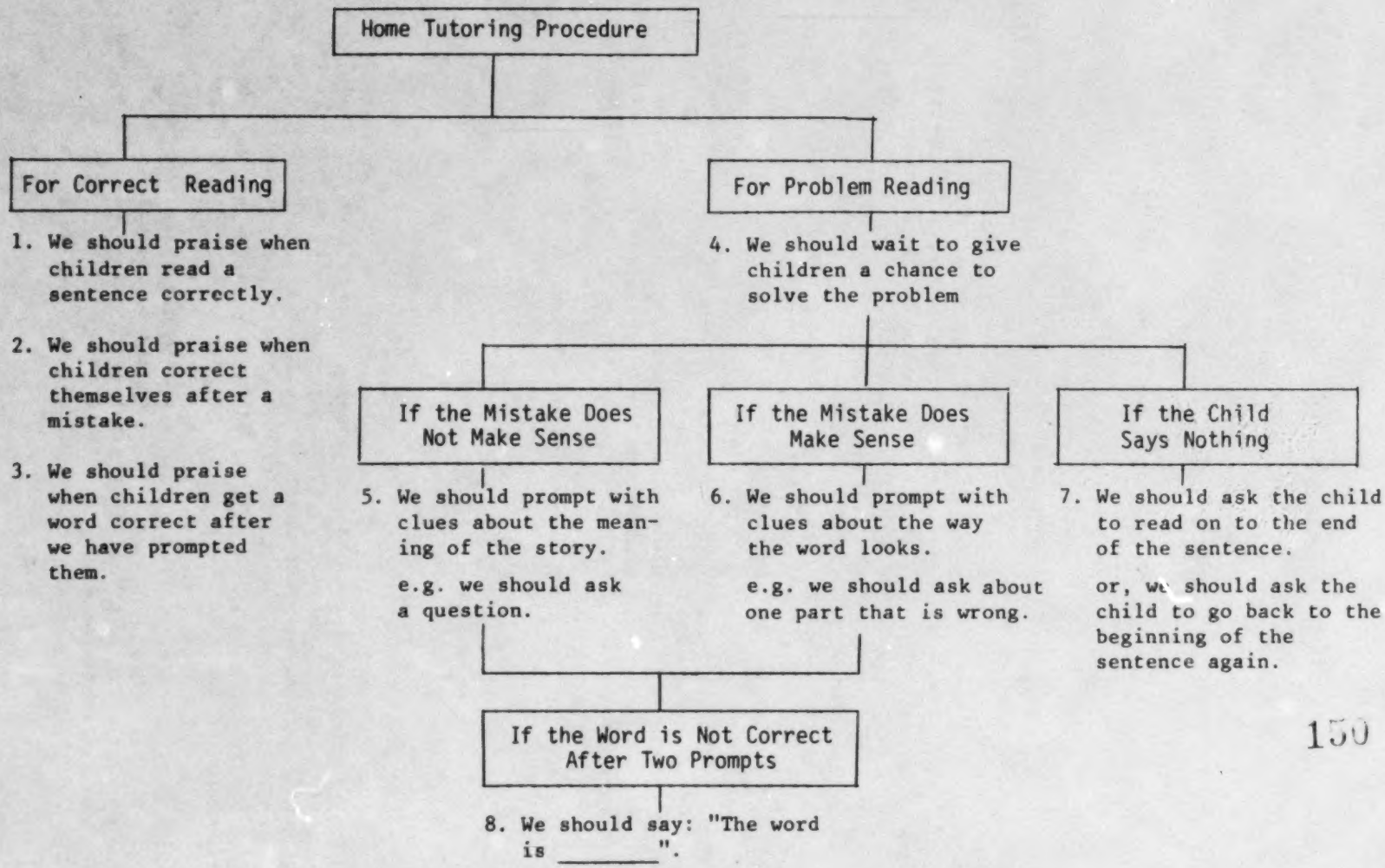

Home Tutoring Procedure
For Correct Reading
For Problem Reading
1. We should praise when children read a sentence correctly.
2. We should praise when children correct themselves after a mistake.
3. We should praise when children get a word correct after we have prompted them.
4. We should wait to give children a chance to solve the problem
If the Mistake Does Not Make Sense
If the Mistake Does Make Sense
If the Child Says Nothing
5. We should prompt with clues about the meaning of the story.
e.g. we should ask a question.
6. We should prompt with clues about the way the word looks.
e.g. we should ask about one part that is wrong.
7. We should ask the child to read on to the end of the sentence.
or, we should ask the child to go back to the beginning of the sentence again.
If the Word is Not Correct After Two Prompts
8. We should say: "The word is _____".

FIGURE 1 : DIAGRAM FORMING THE WRITTEN INSTRUCTION SHEET FOR TRAINING PARENTS AS REMEDIAL READING TUTORS.

Following an error, the tutor was instructed first to wait (to allow time for the child to self-correct) rather than to intervene immediately. If the error was not corrected after a pause of five seconds or after the child reached the end of a sentence the tutor was required to discriminate whether the error was a response error (substitution or addition) or a no-response error (omission or non-attempt).

For a no-response error the tutor was instructed to ask the child to re-read the sentence or to read on to the end of the sentence. For a response error the tutor was required to discriminate further between errors that are contextually or semantically appropriate, i.e. which "make sense", from those that do not make sense. When the error did not make sense the tutor was instructed not to tell the child the correct word immediately (i.e. supply a model) but to try one or two prompts utilizing the *context* of the story, or the *meaning* of the word in relation to the rest of the sentence or story. Only when two such prompts proved unsuccessful did the tutor tell the child the correct word. When the error *already* made sense the tutor was instructed to try one or two prompts concerning graphophonic features of the word - e.g. the sound of the first or last letters, or the length of the word. Again, only when two such prompts proved successful did the tutor tell the child the correct word.

Each of the authors acted as therapist for two tutors. At the beginning of the programme and following baseline sessions the therapist presented each tutor with a copy of Figure 1, and explained that the programme was designed to teach a set of specific tutoring skills. The diagram of "should" statements was retained by each tutor, and used during the weekly training sessions.

(2) Weekly Training Sessions. Each week the therapist (one of the authors) conducted tutor training procedures at one of the regular tutoring sessions. The therapist requested tutors first to recall as many "should" statements as possible without reference to the Figure. The therapist then reinforced tutors for their correct recall, and after that read through the remaining "should" statements with the tutor. Tutors were then instructed to conduct their usual tutoring session carrying out as many of the "should" statements as possible. Throughout the session, the therapist took notes detailing verbatim examples of reading responses and tutor behaviour in response to these errors, whether or not this response matched the appropriate "should" statement. For the first two sessions only, the therapist modelled several examples of correct tutor behaviour following child errors.

Immediately following the tutoring session, when the child was free to leave, the therapist spent a further few minutes with the tutor going over the verbatim examples. First the therapist prompted tutors to recall what they had done when a given error occurred,

e.g. THERAPIST: "Remember when Alistair read 'Sally' instead of 'Susan'? What did you do then?

Positive feedback was given if the tutor recalled this accurately,

e.g. TUTOR: "Oh yes, I said to him: 'You know that word, it's another girl's name - 'Su' - THERAPIST: "Yes, that's right, you did exactly that".

If the tutor could not recall the event the therapist then described what happened, using the verbatim notes. Having established correct recall of the particular event the therapist next provided feedback on the effectiveness of the tutor response,

e.g. THERAPIST: "You did well with that one. You gave Alistair a meaning prompt by telling him the word was another girl's name, but you noticed that his error was already making sense so you gave him a prompt about the sound of the word. You said 'Look how it starts', and Alistair then said 'Susan'."

The therapist followed with a question and feedback on tutor response to this prompted correction,

e.g. THERAPIST: "Do you remember what you said when Alistair read 'Susan' after your prompts?"

TUTOR: "Yes, I said 'Good boy, that's right'."

THERAPIST: "Yes, my notes show that too, you praised him for getting the word correct after you gave him a prompt".

Four or five examples were discussed in this way. Where the tutor had responded in a manner inconsistent with the "should" statements, the therapist provided positive feedback for accuracy of recall, and took the opportunity to ask:

TUTOR: "Yes, that's what you did, now according to our diagram here, what should you have done?"

The therapist then helped the tutor locate the correct "should" statement on the diagram, before going on to the next sample.

(3) Weekly Feedback Sessions. In addition to the weekly training at a regular tutoring session, the fourth author visited the home to conduct a further detailed feedback session. This session was based on her prior analysis of one of the tapes of tutoring sessions conducted in the absence of the therapist. From these tapes, she collected further examples of correct and incorrect tutor responses to errors. She then presented these in detail, as outlined for the weekly training sessions.

Results

Reliability

Table 1 summarizes the reliability data for tutor behaviour for 27 of the 192 home tutoring sessions. Mean reliabilities shown have been calculated from the total number of reliability checks available from all tutor-child pairs both during baseline (untrained tutoring) and trained tutoring conditions. For sessions when one observer recorded zero instances of a behaviour the whole session reliability formula was inoperable.

Table 1

Percent agreement between independent observers on all categories of tutor and child behavior

		Total error attention	Delay	Prompts	Prompted corrections	Praise for prompted corrections	Praise for self corrections	Praise for other appropriate behavior
TUTOR BEHAVIOR	Mean	81.5	69.0	74.5	73.5	84.5	96.5	86.5
	Range	14-100	14-100	33-100	20-100	25-100	40-100	50-100
	SD	19	24	22	26	28	14	18

		Total errors	Omission and non-attempt errors	Substitution and addition errors	Self corrections
CHILD BEHAVIOR	Mean	73.0	68	82	77
	Range	17-100	30-100	33-100	25-100
	SD	17	26	26	17

Table 1 shows that for Total Error Attention the overall inter-observer agreement was 81.5% (s.d. 19). Mean inter-observer agreement for Delay was 69% (s.d. 24) for Prompts the mean was 74.5% (s.d. 22) and for Prompted Corrections the mean was 73.5% (s.d. 26). For the three categories of tutor praise, praise for self-corrections, Praise for Prompted Corrections, and Other Praise for the corresponding inter-observer agreement figures were 96.5% (s.d. 14), 84.5% (s.d. 28) and 86.5% (s.d. 18).

Tutor Behaviour : Effects of Training Programme

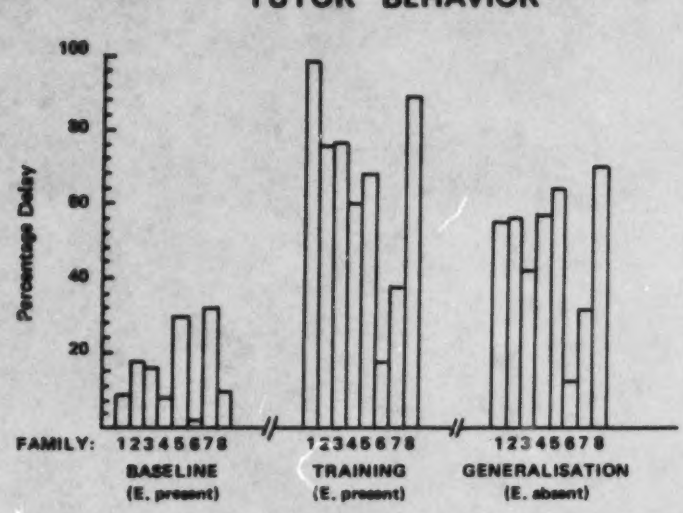
(a) Total Error Attention. Table 2 summarizes the percent of child errors (excluding self-corrections) attended to by tutors, during baseline and training conditions. The overall rate of error attention was high, but showed a slight decrease from baseline to training programme with means of 91% (baseline), 88% training (therapist present) and 80% training (therapist absent). Inspection of Table 2 shows that these mean changes were largely attributable to large drops in the Total Error Attention of tutors of S7 (26%) and S8 (30%), between baseline and training (therapist absent) conditions. The tutor of S8 also showed a 26% decreased from baseline to the training (therapist present) condition. All other tutors did not vary in Total Error Attention by more than 11% across any conditions.

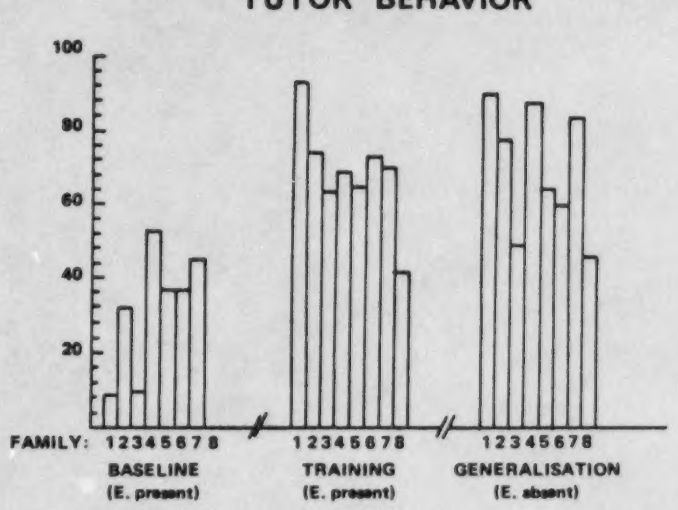
Table 2

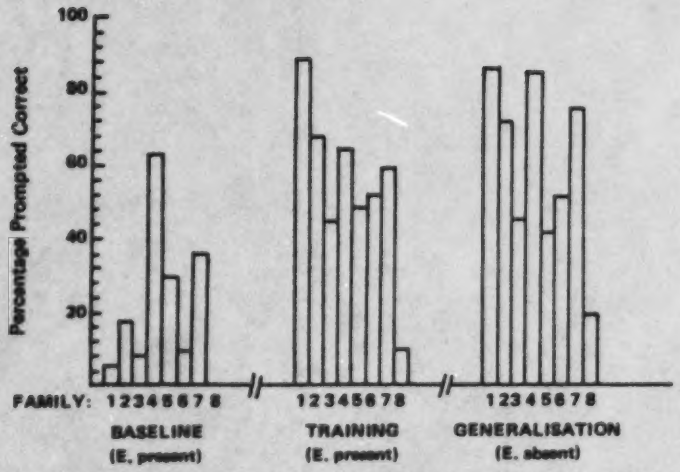
Tutor Behaviour : Percent Total Error Attention Across Baseline and Training and Generalization Conditions

Tutor	Baseline (Therapist Present) %	Training (Therapist Present) %	Training (Therapist Absent) %
1	88	83	79
2	95	84	93
3	81	82	76
4	89	98	81
5	93	96	87
6	98	96	97
7	97	94	71
8	88	67	58
$\bar{x}$	91	88	80

Figure 2 presents summary data from each tutor-child pair for baseline, training (therapist present) and training (therapist absent) conditions. Data are shown separately for Percentage Delay, Percent Prompts, Percent Prompted Correct, and Praise.







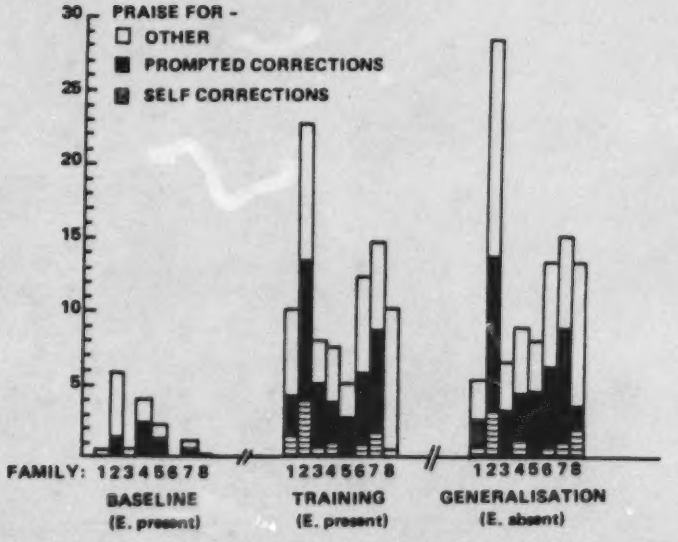


FIGURE 2 : PERCENTAGE DELAY, PERCENTAGE PROMPTS, PERCENTAGE PROMPTED CORRECT AND PRAISE DATA FOR ALL TUTORS DURING BASELINE, TRAINING (therapist present) AND GENERALISATION (therapist absent) CONDITIONS.

(b) Percent Delay. Comparing baseline measures with measures taken under training conditions it is evident there is an increase in Percent Delay under the training programme. The effect is generally quite clear-cut for the tutors of all children except S7. However, session by session data (not presented here) showed the effect is less clear-cut for the tutors of S3 and S7, because of widely ranging baselines. This suggested these tutors were already delaying their error attention prior to training, on some sessions. The tutor of S7 appeared more consistent than the tutor of S3 in this respect. For the tutor of S8, who displayed a near zero level of Delay during baseline sessions, the increase is particularly dramatic.

(c) Percent Prompts. Comparing baseline measures with training measures it is evident there is an increase in Percent Prompts under the training programme. This effect is particularly strong for all tutors, with the exception of the tutor of S4 (who displayed a high level and an ascending trend during baseline making evaluation of training effects on percent prompts more difficult). The data show the effect to be very dramatic for the tutors of S1, S2, S3, S6 and S8.

(d) Percent Prompted Correct. Comparing baseline measures with measures taken during training it is clear that six of the eight tutors displayed a marked increase, following the introduction of the training programme. The increase is less marked in the case of the tutors of S4 and S5. Session by session baseline data for these tutors show that they were already displaying fairly high, though variable, rates of prompted corrections, before the training programme began.

(e) Praise. Again, comparing baseline measures with measures taken during training, it is clear that the introduction of the training programme resulted in increased amounts of praise, over baseline levels for all tutors. Session by session data for the tutor of S5, however, showed that initial increase was followed by a decreasing trend. In the case of the tutor of S2, session by session data showed that the observed increase is unlikely to be due to the training programme, since the data indicated a consistent upward trend during baseline. The increases during training for the tutor of S2 appear to follow exactly the same baseline trend. It is interesting that the session by session data showed all other tutors had particularly low and either zero or decreasing baseline trends on this measure.

Tutor Behaviour : Generalization Effects (Therapist Absent)

The training sessions have been separated into those in which tutoring took place with the therapist present (training) and those in which tutoring took place with the therapist absent (generalization). The generalization data summarized in each graph in Figure 2 show that all eight tutors maintained their gains over baseline levels on all four tutor behaviours during tutoring sessions conducted without the presence of the therapist. The sole exception to this statement applies to the Percentage Prompted Correct measure for the tutor in family 4, where the baseline to treatment increase is only slight, due to an already high baseline level.

Figure 2 indicates also that the target behaviour for which all tutors displayed lowest baseline levels was praise. However, it should be noted that the data on praise in Figure 2 are presented as simple frequencies, or tallies of the number of praise comments occurring per session, whereas data on the other three measures are expressed as percentages.

Child Behaviour

(a) Home Reading Outcome. The major measures of child reading behaviour taken were percent words read initially correctly and percent errors self-corrected. Table 3 shows the changes on these measures in home reading from the baseline to trained tutoring conditions, for all subjects. It can be seen that six subjects had a mean reading accuracy level of 83 percent or better during untrained tutoring conditions, and two subjects S5 and S8 had baseline reading accuracies of 67% and 78%. During trained tutoring conditions, all subjects had average reading accuracies of 83 percent or better, despite the reading material becoming increasingly difficult as the training programme progressed. Table 3 shows also that at the end of the trained tutoring condition all subjects were reading material from one-and-a-half to twelve months in advance of that read during untrained tutoring. The mean gain in book level over 2.2 months of trained tutoring was 6.5 months. Further, the Percent Errors self-corrected has increased substantially for seven subjects (the means for untrained and trained tutoring were 15.0 and 25.5 percent respectively). The sole exception was S6 whose 45% rate of self-correction during untrained tutoring was artificially high, because of several baseline days on which very few errors occurred and most of which were self-corrected.

(b) School Reading Outcome. While only summary data are presented here, a detailed analysis of changes in reading behaviour, measured at school by independent observers is provided in McNaughton, Glynn, Robinson and Quinn (1979). McNaughton et al. reported rapid gains in reading were occurring at school for two subjects (S1 and S3) but for six subjects school gains were occurring at a lower rate than home gains. An additional tutoring phase was implemented for five subjects, (one subject, S4, was withdrawn by his parents at this stage). The same tutoring programme was introduced at school by trained tutors, while the existing parent tutoring programme continued at home.

Table 4 shows the total gains made by all subjects in their reading at school at the completion of the project, (taking into account the combined effects of tutoring at home and, supplementary tutoring at school for five subjects). Overall, there is a gain of 8.6 months in book level, for 2.7 months of tutoring. This represents an average gain of 3.25 months in book level for each month in the programme. Individual rates of gain vary from 0.75 for S4, whose parents withdraw him from the study, to 9.0 for S3.

Table 3

Percent Words Read Initially Correct, Percent Errors Self-corrected and Gain in Book Level during Home Reading under Untrained Tutoring (Baseline) and Trained Conditions

UNTRAINED TUTORING (BASELINE)				TRAINED TUTORING			
	Duration (months)	Percent words initially correct (x)	Percent errors self-corrected (x)	Gain in book level (months)	Duration (months)	Percent words initially correct (x)	Percent errors self-corrected (x)	Gain in book level (months)
1	1.25	89.0	5.0	2.0	2.25	92.0	43.0	6.0
2	0.75	85.0	14.0	0.0	2.0	83.0	29.0	4.0
3	0.5	93.8	18.3	3.0	3.25	93.5	24.7	15.0
4	1.0	83.9	20.1	0.0	2.0	87.4	33.8	6.0
5	1.0	68.4	6.4	1.5	2.5	85.0	20.6	3.0
6	1.0	91.8	45.0	1.5	2.0	87.0	20.8	10.5
7	0.5	87.3	4.4	1.5	2.0	83.4	11.8	4.5
8	1.25	72.8	6.6	1.5	1.5	85.3	20.5	3.0
	0.9	84.0	15.0	1.4	2.2	87.1	25.5	6.5
s.d	0.3	9.0	13.6	1.0	0.5	3.8	9.6	4.2

Discussion

Baseline data summarized in Figure 2, demonstrate that all tutors displayed generally low levels of the four target tutoring behaviours during the untrained tutoring (baseline) condition. The lowest levels occurred on the praise measures, ranging from a mean of zero comments per session (totalled over all praise categories) for the tutors of S6 and S8 to a mean of six comments per session for the tutor of S2. The highest levels occurred on the percent prompts measure, ranging from zero (for the tutor of S8) to 54% (for the tutor of S4). Six tutors provided some form of prompt in better than 30 percent of these responses to child errors. On the percent delay measure, levels ranged from 3% (for the tutor of S6) to 32% for the tutor of S7, and on the percentage prompted correct measure levels ranged from zero (for the tutor of S8) to 63% for the tutor of S4.

Table 4

Gain in Book Level (months) of Reading at School During Combined Home and School Tutoring Conditions

	Tutoring	Gain * (months)	Duration** (months)	Rate of Gain per month
S1	Home Tutoring only	10.0	2.5	4.0
S2	Home and School Tutoring	6.0	2.75	2.2
S3	Home Tutoring only	22.5	2.5	9.0
S4	Home Tutoring only	1.5(withdraw)	2.0	0.75
S5	Home and School Tutoring	3.0	2.5	1.2
S6	Home and School Tutoring	4.5	2.75	1.6
S7	Home and School Tutoring	10.5	3.5	3.8
S8	Home and School Tutoring	10.5	3.0	3.5
$\bar{x}$		8.6 months	2.7 months	3.25
s.d.		6.6 months	0.4 months	2.62

* *Based on level of book read with an accuracy level of 90% or better.*

** *Duration refers to the number of weeks in which at least one tutoring session occurred.*

The data from the untrained tutoring sessions depict parent tutors who attended to the majority (91%) of children's reading errors (Table 2) who intervene immediately rather than delay their intervention, who supply models (tell children the correct word) more often than they provide a prompt, and who achieve only a low to moderate percent of errors prompted correct (Figure 2). This tutor-child interaction pattern can be viewed as restricting children's opportunities to self-correct or to learn to correct errors with the aid of prompts. This pattern is likely to foster increased dependence of these children on their tutors as the major source of error correction. The low levels of praise comments support the belief the untrained tutoring sessions could be mildly aversive for both parties. However, the sessions were certainly not as stressful as teachers had suggested. Therapist presence during all baseline tutoring sessions and the short times involved probably helped to prevent these baseline sessions from becoming too punishing for tutor and child.

However, it should be emphasized that tutors were not incompetent, even under baseline conditions. Three children gained two months in reading level and one gained four months during baseline. This finding is consistent

with data from a survey of Nicholson (1979) which found that almost all parents questioned felt they could help their children with reading, though they were unsure about what techniques to use. It is possible also that providing regular and structured opportunities for the child to read, may itself prove beneficial for both child and parent due to the "reactive effects of experimental arrangements" (Campbell and Stanley, 1968). This justifies the need for including an adequate baseline of untrained tutoring sessions prior to introducing the tutoring programme in studies of this kind.

Data in Figure 2, show marked increases in level of target tutoring behaviours for all tutors, with the introduction of the training programme. The training programme was clearly effective. This study cannot point out which of the training programme components (written instruction sheet, weekly training sessions, or weekly feedback sessions) were critical since all components were introduced concurrently. Component analysis of the training package must await further research.

Despite the possible load on tutors because of concurrent training on four behaviours, the session by session data showed that increases on all four behaviours were generally immediate (occurred within the first two or three days of training). Tutors in the present study had little difficulty in learning four separate responses simultaneously. This is of interest in view of findings reported by Panyan and Hall (1978) who found in training of retardates, that concurrent training of separate responses and serial training of separate responses had similar effects in terms of response acquisition, but, in terms of generalization to other responses of the same class, concurrent training was consistently superior. In the present study generalization of parent training to new responses was not examined but generalization to therapist-absent conditions was. Figure 2 demonstrates that for all tutors target behaviour gains made under therapist present (training) sessions, generalized to sessions conducted without the therapist.

The concurrent implementation of all four tutor behaviours may have altered the tutor-child interaction in a way that would not have resulted had the behaviours been introduced sequentially. The child home reading outcome data (Table 3) taken together with the tutor behaviour data suggest a changed pattern of interaction to one which promoted increased independence of the child from the tutor. This is supported by the increased proportion of errors self-corrected, and the increased tutor praise for self-corrections that occurred with the introduction of the training programme. The data from the trained tutoring sessions depict parent tutors who continue to attend to the majority (though not all) of children's reading errors (80%), who delay their intervention rather than intervene immediately, who provide prompts to assist the child rather than tell him the word, who achieve a moderate to high level of errors that are prompted correct, and who display increased levels of praise. The generalization of this pattern to non-training sessions may perhaps be attributed to the changed tutor-child interaction such that children's demonstrated improvement in reading level, marked increases in self-correction may be both cueing and reinforcing tutors for correct implementation of the tutoring behaviours.

This study has achieved four of the aims described in the introduction. A particular set of remedial tutoring behaviours was specified on the basis of previous research and baseline measures of these behaviours were taken. A training programme was introduced, and shown to increase the levels of all four tutor behaviours in all tutors. Tutors were found to generalize their increased tutoring behaviours to sessions in which therapists were absent. In addition, reading outcome data show gains in book level from three to nine months for between six and thirteen weeks of trained tutoring at home. All children had reading deficits ranging from 2.4 years to 6.0 ($\bar{x}$ = 4.1 years) at the beginning of the study.

Achievement of the fifth aim, that of demonstrating that child reading gains generalized to the school setting was more limited. Detailed analyses of the school reading of all the children (McNaughton et al. 1979) indicates that improvement in self-correction and accurate reading took longer to occur (i.e. a greater number of sessions on a particular book), than at home, with the programme in operation. The rate of moving children to higher level reading books demanded by the experimental design may have been too rapid. Thus the increased difficulty of the task combined with the lack of tutor support in the school setting rendered the school setting too dissimilar to the home setting for immediate generalization to occur with some children.

One factor influencing the success of the home tutoring programme by the parents in this study was the conducting of all training on an individual basis in the home setting, at times selected by the parents. The programme did not require parents to attend formal meetings away from home, with the added difficulties of arranging transport, and finding and paying for baby sitters to care for other children. The programme package provided regular feedback to tutors on their own performance of the four target responses with their own child. This would have been difficult to achieve in a group training setting held outside the home. The one-to-one training situation, in which immediate feedback is provided on one's own performance, has proved in this study to be just as critical for the acquisition of remedial reading tutoring skills by the tutor as it is for the acquisition of self-regulated reading by the child.

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LEARN TO PLAY - PLAY TO LEARN

Jean E. Calder

Introduction

Play is something that is universally recognized, it is expected to dominate childhood behavior, and it is considered to be an important venue of learning and development, especially for young children. The concept of "learn to play" is far less recognized or understood. A focus of this paper is on the relevance of the concept "learn to play" as a sometimes necessary element of play experience and as a precursor to any instrumental structuring of play for educational or therapeutic purposes.

The paper also places focus on physical activity as an essential element of play and development. Physical activity and play are two distinct but interrelated aspects of child development, both being integral aspects of the developmental process.

As the theme for the conference is "Too Late at Eight", specific attention is directed towards factors associated with deprivation of play experiences and the outcome of such deprivation. Having set the scene of problem situations, some consideration is given to approaches towards enrichment of play opportunities.

Play

"Play is the most serious business of childhood" is a phrase that is commonly met within the context of educational and developmental parlance. Recognition is given within programs for young children of the important role of play in child learning and/or as a break from formal learning tasks.

However, although both the importance and diversity of play receive such recognition, acceptance of the value of play when matched with value of formal skill learning is frequently missing, as is an understanding of the status of play experience for children who exhibit problems.

In order then to address the topic of this paper in a meaningful way, it is important firstly to consider some of the dimensions of play. Play is considered as a universal behavior and as such presumably vital to human existence. Its relationship tends however to be speculative primarily because play eludes classification. Scholars continue to seek explanations of the phenomena and so add to the list of theories that exist. Therapists and educators develop approaches for the utilization of concepts of play in their professional endeavours to provide appropriate experiences for children. In spite of such academic exercises, children

continue to play, some children experience unnecessary deprivation of play experience, and adults fail to grasp the seriousness of play in terms of the lifestyle of a child.

What is play? The dictionary provides a list of definitions of play, theorists have provided a wide range of explanations, people from many different professional groups view the concept from their respective perspectives, each person reading this paper will have specific ideas about the concept, as does the individual, child or adult, engaged in a play experience.

Such a situation suggests an area in which many unquestioned assumptions are made, in which an increasing number of questions are being asked, and in which a great deal more study is needed. It also suggests that the topic of play is not simple, but that rather it is multidimensional. Something of the multidimensional nature of play can be realized through reference to the model shown in Figure 1.

The focus of the model is on the participant and a range of factors important to the participant as an individual. Involvement in play is seen primarily as expressive personal involvement of the participant. It suggests dignity and success - it is non-threatening. Involvement in play is also seen to be indirect, either as specific instrumental endeavours of the participant - exploratory, manipulative (of things/people), imaginative, creative, testing, etc., or as imposition by others on the child's play for specific reasons - educational, therapeutic, etc.

Play itself is both internal and external. This dimension is especially important in terms of an adult being sensitive to what IS play to a child and what APPEARS TO BE play according to adult standards.

In order to understand what is taking place in a play situation, component parts need to be considered. It is suggested here that play may be analyzed within content, structure, and process. Although interrelated, these component parts have distinctive elements within them.

To look at relationships between the different parts of the model, and to consider the overall appropriateness of the situation, provides a valuable means of ensuring quality experiences for children. Placed within the context of societal norms and expectations, an even clearer picture can be formulated.

If, on the other hand, play is viewed primarily from only one of the dimensions suggested by this model - or from any other isolated bias - information would be both limited and distorted. Eventually, we need to seek out and to understand many dimensions of play.

Play in education. Ellis (1973), as have other writers, pointed out that play tends to be under attack by the conditions in modern society. He viewed the process of education as having assumed critical importance in society and for there to be a tendency for it to expand at the expense of play. Caplan and Caplan (1973) have been sharply critical of those who place play at one end of a value scale and learning and work at the other. They noted that this type of sharp distinction relegates play to pre-school

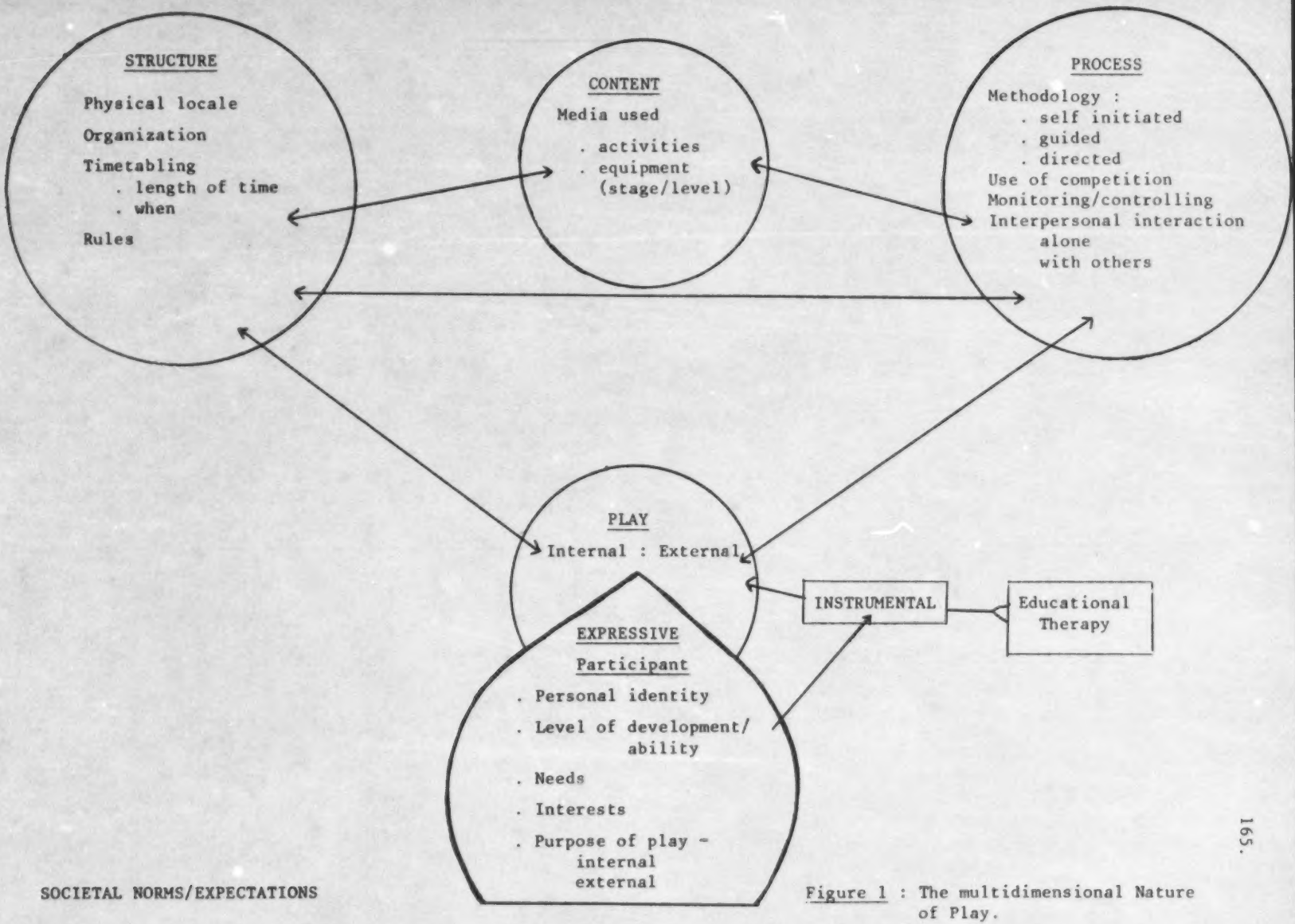

Figure 1 : The multidimensional Nature of Play.

activity and cuts a sharp line which allocates subsequent educational experiences to formalization. In contrast to such trends it has been suggested that real learning is far closer to play than to work. That play is life-long education. Developing their theme further, Caplan and Caplan suggested that play has exceptional power, and they discussed fifteen contributory aspects in order to illustrate their claim. As their list includes most of the values commonly attributed to play, it is convenient to present their list for consideration:

* playtime aids growth
* play is a voluntary activity (intensely personal)
* play offers a child freedom of action
* play provides an imaginary world a child can master
* play has elements of adventure in it
* play provides a base for language building
* play has unique power for building interpersonal relations
* play offers opportunities for mastery of the physical self
* play furthers interest and concentration
* play is the way children investigate the material world
* play is a way of learning adult roles
* play is always a dynamic way of learning
* play refines a child's judgements
* academics can be structured into play
* play is vitalizing

Bengtsson (1974) claimed that children have a right to play, suggesting that such a fact is all too often forgotten, neglected, or ignored by adults. International support of this thesis is presented by means of quotations from the U.N. Declaration of the Rights of the Child, and a resolution made by the International Playground Association at their 1972 Conference in Vienna. Both of these statements are included below:

> *The child shall have full opportunity for play and recreation, which should be directed to the same purpose as education: society and the authorities shall endeavour to promote the enjoyment of this right.*
> (U.N. Declaration of the Rights of the Child, in Bengtsson, 1974: 7)

> *Governments and local authorities should take provision for the out-of-school life of children as seriously as provision of formal education, building of roads and parking places, and disposal of sewage...*
> (International Playground Association, 1972 in Bengtsson, 1974: 6).

Play. In summary it may be stated that play is the essence of the lifestyle of the child. It is a multidimensional concept which may be expressive of the child or which may be utilized for specific educational and/or therapeutic purposes. Recognition is given to the importance of play, international declarations promote the concept of the child's right to play, but in reality, play tends to be both little understood and largely undervalued. The fact that some children need help in learning to play is largely overlooked.

Physical Activity

Physical activity is a prime aspect of play. Physical play frees children to practice their motor skills, to test themselves, and to explore. It enables them to discover their physical selves and the power to affect the world in which they live. All play is active and, in most instances, is associated with bodily activity (Caplan and Caplan, 1973). Just to move is fun.

Whitehurst (1971) noted that psychologists have long been aware of the significance of the motor dimensions in the development of the young child. Departing from more usual approaches to the topic, Whitehurst attempted to make a presentation of the child's perspective of what movement means, discussing the following eight concepts:

* life
* self discovery
* environmental discovery both physical and social
* freedom, both spatial and self-expressive
* safety
* communication
* enjoyment and senuous pleasure
* acceptance

The child's use of body is a mode of creative and human communication. It is response to development and a contributor to further development. Stages and sequences of motor development can be observed and recorded. However, attempts to fragment the child by isolating aspects of development - cognitive, motor, social, emotional - does not make sense. Movement involves the whole child and the whole child moves when involved in play. Movement and play are manifestations of development, and they contribute to further development.

It is relevant to consider the wide range of possibilities which exist both in terms of experiences and specific activities within the concept of physical activity. In general terms, physical activity may involve gross movement or it may focus on fine motor skills/manipulation. The activity may be very boisterous ranging through to being very quiet with little movement. Movement may be primarily functional or it may be directed towards some aspect of play. Movement itself is important.

Movement in education. Gallahue, Werner and Leudke (1975) presented a model which shows interaction between the phases of motor development, the sequence of learning experiences, and teaching approaches (Figure 2). Education in movement is, or should be, an integral aspect of educational programs. Appropriately designed programs enable children to consolidate fundamental motor patterns and to learn motor skills. Such development contributes to their growth and well being and enables them to develop mastery over the environment and the day to day physical demands of living. It also contributes to play skills, an important dimension often overlooked. By eight years of age, the majority of children have developed all of the fundamental motor patterns, and subsequent motor development involves extension and refinement of these patterns.

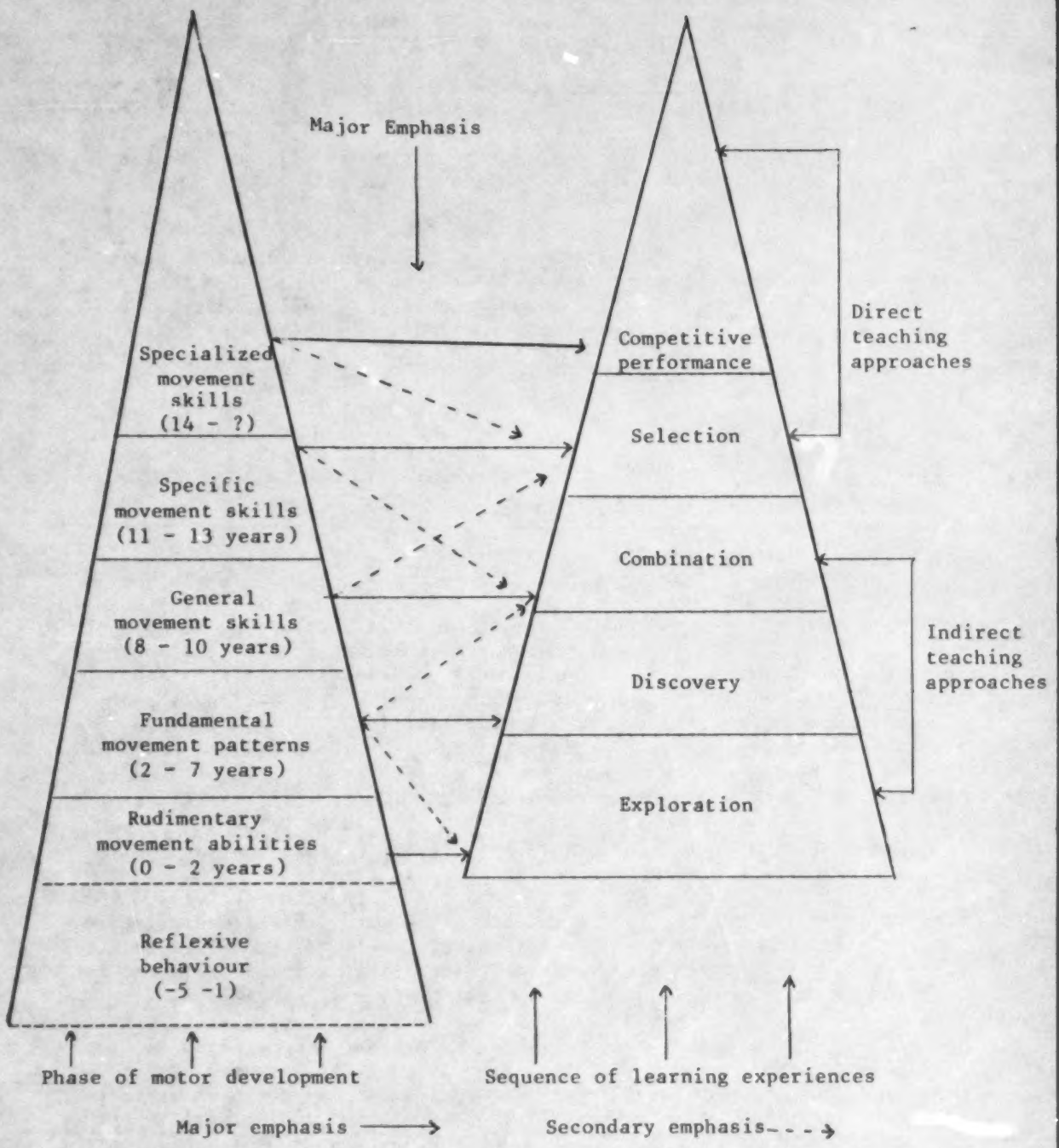

Figure 2 : Interaction between the phases of motor development, the sequence of learning experiences, and teaching approaches (Gallahue et al, 1975 : 16).

"Learning through movement" has become a popular adage in education especially within the rubric of perceptual-motor programs. Learning to move, just as crucial to children, is not given the same attention. Although learning to move and learning through movement are not mutually exclusive it is important to recognize the differences and the implications of such differences (Halverson, 1971).

Physical activity. It has been suggested in this section that physical activity is essential to the child and that it is an integral aspect of play. Like play, the importance of movement in child development is recognized, but the value of movement in its own right is underrated. The need for children to learn to move also receives little attention.

The child moves to play, sometimes with energy sometimes in stillness. Mood, the essence of the movement is expressed. The child is "being". The educator, the parent, so often fail to see this gem, rather looking at the moment as a means of hastening more "purposeful" activity.

Play Experience for the Child with a Problem

A child with a problem is first of all a child and play is as important as it is for the child free of problems. Problems may be minor and/or temporary; or problems may be permanent and/or severe; a problem may be classified as a disability. Children with problems are likely to have accompanying barriers to play to such an extent that deprivation of play could be listed as a secondary disability. Faced with this situation attention needs to be given to the provision of opportunities for these children to learn to play. In these situations, the concept of "learn to play" is no longer a theoretical nicety but rather an essential ingredient for development. In many instances, learning to play will necessitate learning play skills, primarily movement skills, and/or interpersonal interaction. Whatever the focus of "learn to play" endeavours, physical activity will necessitate specific attention.

Deprivation of play. Before looking at the problems facing children with such a secondary handicap, and within the physical activity focus of this paper, attention needs to be given to factors which may lead to deprivation of play experiences. Some of these are listed below, and the reader could readily add others. Realization of the interrelatedness of these and other factors and the complexity that this suggests needs also to be considered.

Factors contributing to deprivation of play experiences:

* Disability barrier to access to regular play area.
* Parents, teachers, others may overprotect the disabled child and so exclude him/her from regular play experiences.
* Child may withdraw from play experience frustrated by failures because of lack of skill or understanding.
* Rejected by other children.
* Because of periods of hospitalization and specialist treatment child may be removed from the company of other children for extended periods of time.

* Because of breaks in schooling, "free time" and subject periods such as physical education used to catch up on school work.
* Because of nature of disability extra time may be required on studies in order to keep up.
* Left in classroom)
  T.V.)
  Scorer) - substitute activities seen to be adequate.
  Mind property)

Outcomes of deprivation of play. Morris and Whiting (1971) explored this topic in depth, looking specifically at the situation of children with motor impairment. They suggested that limited potential in acquisition of a wide range of motor skills, many of which are culturally desirable skills, could have devastating outcomes. They stated that the conceivable outcome of such an intolerable situation could initially lead to antipathy towards and avoidance of particular activities and all associated with it. Further they saw possible consequences as restlessness and discontent, being prelude to social maladjustment or delinquent behaviour. Research that they cite would suggest that this conjecture is far more than a hypothetical scenario.

There also exists in the literature many statements by concerned parents aware of the damaging effects of this secondary disability foisted on the disabled child. Morris and Whiting (1971) quoted numerous such statements, and segments of several of these are included below in order to illustrate the problem:

> *1. Son, 11 years of age, very poor coordination ... scorned by boys his own age. This has also been a handicap. He suffers socially with children who are aware of his handicap...* (p.37)
>
> *2. Perhaps it is too late psychologically to help my child because of the scars of ridicule by other children and his own awareness of his lack of ability and my own over-protectiveness might be too deep.* (p.34)
>
> *3. ...He has lost two of his neighbourhood buddies because he can't play ball well enough to suit them and that is all they want to do. The fact that he does better than they in school doesn't seem to console him when he wants to play.* (p.38_
>
> *4. ...5½ year old son - poor coordination affected him socially for at least the last two years.* (p.38)

The children at risk. It is impossible within a paper of this type to look closely at the many different disabilities which may exist, and the specific problems that these pose to children in terms of play. In general terms however, it is possible to acknowledge that children with a disability are at risk in terms of a secondary disability - deprivation of play experience. Focussing on motor performance, and recognising the importance of motor ability in childhood play, the following results of a motor performance test conducted in selected schools in Brisbane in 1975 (Calder) are important to consider. The children tested were between the ages of five and eight years. Each child was given a total test score and these totals were scaled 1 - 7.

Table 1

Frequency Distribution for All School Types on Total Test Scaled to Produce a 7 Point Scale with cut-off points relevant to a normal course for the regular School Data

Type of School	N	Frequency Percent						
		Low			Normal			High
		Score 12-	12-18	19-21	22-28	29-34	35-40	40+
		Scale 1	2	3	4	5	6	7
Regular	409	3.4	15.9	13.0	38.4	24.4	4.9	-
Opportunity	92	46.7	33.7	10.9	6.5	1.1	1.1	-
Learning Difficulty Classes	19	21.1	47.4	10.5	15.8	5.3	-	-
Remedial Classes	15	-	40.0	6.7	46.7	6.7	-	-

As may be expected, a far greater percentage of children in special education settings scored low on the tests than did children in regular schools. It is also noted, however, that approximately 19 percent of children in regular school scored low, and that 18 percent opportunity school, 32 percent learning difficulty and 60 percent remedial class children scored within the normal range. It is also important to point out that none of the children who were tested had a diagnosed motor deficit. Children with recognized physical disabilities were not included in this sample.

It would seem from these results that the need for appropriate physical activity programs is evident for a large percentage of children identified as having the particular disabilities included and for some not identified as such. From what is known in the literature these children are at risk in terms of successful play experience with peers. This in itself is important information. However such results are limited and are presented here as a specific example only. They do not include information specific to other disability groups, they do not look at other factors which may contribute towards 'at risk' status in play for other reasons, nor do they study the play patterns of the children concerned.

Play experience for the child with a problem. Some evidence has been presented here of factors leading to deprivation of play experiences of children who are disabled. Specific consideration was given to motor impairment and the possible outcomes of such impairment in terms of play with peers.

In view of such evidence and recognizing the importance of play, attention needs to be given to ways and means of ensuring appropriate play experiences for all children, with attention to the enrichment of

play experiences for those children who are at risk of the secondary disability - deprivation of play. Children in such a situation need help. The range of approaches and types of activities to consider are as diverse as the range of children needing them. Consideration needs therefore to be given to general principles rather than to a cookbook list of things to do. As the focus of this paper is on physical activity, attention to opportunity to learn to move is viewed as an essential aspect of learn to play.

Enriching Play Opportunities

In an earlier part of this paper a model (Figure 1) was presented in order to show the multidimensional nature of play. In order to discuss ways of enriching play opportunity it is useful to return to this model and to consider each of the aspects within it.

Participant. In order to become sensitive to the needs of the individual child attention needs to be given to developmental factors - physical, social, emotional, and intellectual. From this information meaningful selection of activities and approach to progression can be made. The approach is child centered. One needs to be able to recognise when the child is playing - however simple the form may seem to be. One also needs to assess the extent to which the child needs assistance in learning to play.

Content. With the focus being on physical activity particular attention is given to the range of physical activities that may be made available. Whatever the selection made - playground activities, ball activities, dance, swimming, etc. - progressive stages need to be provided for, and specific implications of the child's developmental level accounted for. Developmental aspects need to be highlighted which brings to question current trends of emphasising sport and competitive activities for young children.

Specific equipment or toys associated with activity, is an aspect that is receiving an increasing amount of attention. However, frequently simple unsophisticated objects around the house or readily obtainable will serve a more useful purpose than expensive commercial products (e.g. large inner tube of a tractor tyre in lieu of trampoline), a dimension too frequently overlooked. The manner in which equipment and toys may be used is also receiving some consideration.

Selecting appropriate content is important, but only a step towards the desired play experience. The match with the needs and interests of the child is crucial. Attention to structure and process of the play experience is also essential if the play content is to be meaningful for the child. Specific attention is not always given as to how to ensure that the child can explore and experience the content to best advantage.

Structure. Structure of the play experience may relate primarily to the setting up of the environment for play. It also relates to the organizational components of time allocation for play-time and/or utilization of play situations for other purposes. The hierarchical structure of persons associated with the play opportunity is also a structural component, which has the potential to either facilitate or limit.

Process. Process relates to the interpersonal aspects of the play experience and the extent of freedom present for the child to discover, explore, create, or respond to challenge. It is essential that the child experiences success. Methodological considerations will to a great extent determine the process, or at least set the boundaries within which processes will emerge.

If children have problems in playing, play will not just happen. Possible content, structure, and process, in relation to the child's needs have to be considered so that the child has opportunity to learn to play - to get the direction which will enable play to emerge and to gradually enable independent extension of play skills and situations.

Instrumentation/Expressive. It takes a skilled hand to set the stage for spontaneous play and to know how to guide it unobtrusively (Caplan and Caplan, 1973). The adult needs to look closely at each situation so that play may be optimised.

Play should be play for children, and those children experiencing difficulty in playing need to be given the necessary stimulation and/or guidance that will enable them to capture the joy of play. This needs to be built carefully on from those elements of play in which they do engage. If play is used instrumentally as an educational or therapeutic tool, the adult needs to be aware that such an experience may or may not be play to the child. Play is of immense value in the instrumental sense, but play for its own sake should also be valued.

Summary

Play was presented as a universal, multidimensional concept that is essential to childhood. Physical activity, also an essential element of childhood was seen to be an integral aspect of play. It was suggested that play in general and movement in particular were recognized elements within early child development, but more in terms of media for education or therapy than expression in their own right. It was further suggested that in some instances attention needs to be placed on opportunity to learn to play. Focus was given to physical activity within play and the need to provide opportunity to learn to move. It was claimed that disabled children are at risk in terms of a secondary disability - deprivation of play. The damaging effect of failure and lack of opportunity with play was highlighted.

Recent educational and psychological research has indicated that by eight years of age - which is the end of the most intense period of play - a child's personality, character, creativity, and academic motivation are 80 percent accomplished. Further, the indication is that subsequent years although enlarging the content do little to increase personal commitment or interest in learning (Caplan and Caplan, 1973).

A rich play environment which is child centered and movement oriented was advocated. Attention to learn to play opportunities for the child experiencing problems and/or deprivation of play was presented as essential. Play is the essence of childhood. Such experiential opportunity is the right of every child.

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EVALUATION AND ASSESSMENT OF COMMUNICATION DISORDERS

N. Slorach

Man is essentially a social being, and social interaction is carried on, for the most part, by vocal-verbal behaviour in the form of speech. By means of speech and language we are able to express our thoughts, feelings and emotional states to other people within the environment. What is language and what is speech? How do we learn language and how do we learn speech? What are the factors which may impede the acquisition of these abilities? These are some of the questions which need to be considered when we are dealing with communication disorders. Language is basically an organized system of linguistic symbols - words - which are arranged in an orderly sequence to form the syntax of a language. These words are, in turn, based on an orderly sequence of sounds produced by the muscular movements of the speech organs. These sound patterns are, in their turn, based on the vibrations produced within the larynx and later modified as the breath stream passes through the vocal tract. Communication through speech requires that through complex mental processes thoughts are formulated into language and that language is transmitted through the activity of the motor nerves, the resulting muscular movements producing articulate sounds forming recognisable symbols. These processes are dependent upon the organism's abilities to receive, interpret, integrate and express linguistic symbols. These linguistic symbols are received, primarily through two of the major sensory channels: vision and audition. As a correlate, the expression of language finds its outlet through writing and speaking. In addition, both the reception of language and its expression can be modified by many cumulative functions, such as intelligence, perception, motivation, emotional states and other factors which increase the complexity of the language process.

Levels of the Communication Process

Level 1

At Level 1 the child produces sounds - cries - vocalizations. This is the level of basic sensation and primitive movements. Auditory, tactile and kinesthetic sensory processes are involved in addition to movements of the muscles of the mouth, pharynx, larynx and the whole of the vocal tract.

Disorders at Level 1 would include severe hearing loss which would block the auditory pathways and prevent the normal development of speech.

At the motor level, a failure here would affect the basic muscle movements and coordinations necessary for speech production.

Level 2

At Level 2 the child is beginning to discriminate and to recognize sounds associating such sounds with objects and people in the environment. He will be babbling and developing his range of vowels and consonants and the various CV and CVCV combinations. During this stage he is developing the receptive and executive patterns required for the later use of words, together with maturation of the muscular coordinations necessary for speech production.

Disorders at Level 2 would include a mild hearing loss which would cause some degree of defective discrimination of speech sounds. Motor disorders at the productive level are also manifest in those children who have varying degrees of neuromuscular programming and coordination of the speech apparatus, for effective speech production.

Level 3

As the child progresses, sounds, words and speech and language patterns begin to take on meaning as the receptor processes for increasing comprehension of language gradually develop. It is during this phase that some children show deficits in comprehension and expression of language which is frequently referred to as receptive or expressive dysphasia. These children are different from those with an overall general intellectual deficit, in that their abilities on non-verbal tests show a marked imbalance between the verbal as opposed to the non-verbal tasks as determined by the standard intelligence tests. In my experience this is a relatively rare condition which needs careful and comprehensive evaluation of the areas of strengths and weaknesses in all modalities before a diagnosis can be made.

Level 4

As the child develops his neuromuscular skills, his motor coordinations, his comprehensive and expression of language, he is entering the stage when language can be used to express thoughts and ideas and emotions, and take on the internalization of these processes in order to engage in higher levels of abstract thinking and reasoning. Language can be used to express thoughts, feelings and emotions in the absence of the immediate present. Parallel with this stage is the acquisition of skills involved with reading and writing. Unless the child has a firm foundation in the linguistic processes associated with the phonological, syntactic and semantic components of the language, his abilities in developing the skills associated with reading, writing and spelling of words will be limited.

On this basis then, we can begin to classify different types of problems which may occur and impede the acquisition of these processes.

1. At the level of the larynx where the primary sound source is initiated, there may be factors which modify or alter the quality of the vocal tone - leading to a defect of voice quality, or, a vocal disorder.

2. At the level of the articulatory mechanisms there may be factors which lead to faulty production of the sound patterns of the language, or, an articulation disorder.

3. At the level of brain processing where language is received, integrated and expressed, there may be a language disorder.

4. At a fourth level, when the voice quality is normal, the articulatory processes are normal, the linguistic and syntactic processes are normal, but there is a breakdown in the fluency by which language is expressed, we have the disorders of fluency, mainly characterised by stuttering or cluttering.

5. A fifth level of communication breakdown can also occur when all of the above processes are within normal limits and this level refers to those children who are psychologically and emotionally disturbed and have problems in their interpersonal interactions with people.

6. A sixth level of breakdown occurs when all or any of the above conditions appear in one or more combinations. In this group we include the children with multiple handicaps such as occur in cerebral palsy, where the child may have deviant voice quality, articulatory disturbances and an associated language problem.

Articulatory Development and Disturbances

When we look at the stages in the acquisition of the articulatory processes, we find that the first stage is from birth to approximately 10 months to 1 year of age. During this stage the child communicates, primarily through crying and gestures. However, several important pre-requisite developments take place in preparation for articulatory skills. The ability to discriminate perceptually develops very rapidly, especially in the auditory modality - hence the need for normal hearing if speech patterns are to emerge at the appropriate stages. The child experiments with sound play, or babbling, and covers a wide range of sound patterns and combinations which later merge into his first meaningful utterances. Related to this is the development of imitative behaviour, whereby the environment provides the stimulus and the child produces an imitative response. As he develops through these stages he is storing the sound patterns and the articulatory postures needed to produce these sounds in a long term memory store, so that he can draw on them at appropriate times. From approximately 1 year to 18 months, one-word utterances begin to emerge, and by 18 months we can expect the child to have acquired approximately 50 words.

Although there is wide variation in the acquisition of sound patterns there is a general developmental sequence which progresses from the vowel sounds /a/, /i/ and /u/ to consonant-vowel syllables or CVCV syllables. Even at this very early stage there are organized processes which the child is using to simplify the adult patterns to sounds which are within his articulatory grasp. One of these processes for example is the maintenance of the CVCV shape so that 'ball' becomes 'bally', 'dog' becomes 'doggy'. Another is the reduction of consonant clusters (2 or more consonants together) firstly to one consonant, e.g. 'play' may be given as 'pay', later there may be a substituted consonant 'pWay', and finally the adult form of 'play'. These processes are dropped as the child's articulatory skill allows closer approximations to the adult form. From 18 months to 3 years of age the articulatory patterns develop to include the tongue tip and back of tongue sounds /t/, /d/, /k/, /g/ and /ng/, but even so the simplifying processes are evident in that the production of the sounds will vary according to their phonetic context, i.e. what other sounds they are close to. This frequently leads to the production of 'tat' for 'cat' and 'gog' for 'dog'. While these are expected patterns in a 2-3 year old, should they occur in a five year old there would be reason to suspect that the child is having a problem losing the simplification process and that he may well need direct intervention to expand his rule system and make closer approximations to the adult model.

The next stage in the articulatory process is the acquisition of those sounds that need a greater degree of muscular coordination in order to produce the sound, and we note the emerging use of /f/, /v/, /s/, /sh/ and by five years of age we would expect the child to be articulating these sounds adequately. Between 5-6 years he should have mastered the /l/, /r/, /ch/, /j/, and by seven years the clusters of sounds /st/, /sk/, /sp/, and by seven years the triple clusters of /spr/, /str/ and /skr/.

What the speech pathologist aims for is an analysis of the child's system of processes and sound combinations to determine whether his articulation is within normal limits, whether he is merely showing an overall delay in the acquisition of these skills, or a specific delay involving only certain processes, or whether he has a deviant and highly idiosyncratic pattern. Each of which may require direct intervention to help him master the rules of the phonological system.

Language Disorders

Parallel with the child's developing articulation patterns is the acquisition of the syntactic system of the language. The linguistic stages which a child goes through begin with the prelinguistic stages of communication through gestures and crying patterns until by one year we see the emergence of single word utterances - this is called the holophrastic stage, where a single word seems to stand for the equivalent of an adult sentence. As the child develops through the one word utterance stage, from one year to 18 months, he should have acquired a working vocabulary of approximately 50 words. From 18 months onwards there are two behavioural changes - a sudden increase in vocabulary and the onset

of two-word utterances. Particularly important is the combining of nouns and verbs to form rudimentary sentences, so that by 3½ - 4 years simple sentences are well formed by adult standards. As the linguistic skills develop, there is an increase in sentence length by the addition of modifiers, prepositional phrases and the like. Sentence length also increases by coordination between sentences, e.g. "I went home and had a sandwich and I went out to play". The development of normal language depends upon the reception and integration of incoming stimuli before the expression of language can logically follow. Functionally, language can be divided into three levels: (1) receptive language, or the language used to understand what others say - this includes listening and reading; (2) integrative language, or the language used internally for thinking and reflection; and (3) expressive language, or the language used to communicate with others - this includes both speaking and writing.

A delay in the acquisition of linguistic skills may be associated with the following factors: (a) central nervous system impairment; (b) varying degrees of hearing impairment; (c) sensory disabilities; (d) subnormal intelligence; (e) environmental deprivation; and (f) emotional maladjustment. The speech pathologist is concerned in the first instance with the differential diagnosis of the presenting problem, and in order to accomplish this we need the doctor, the psychologist, the audiologist, and the classroom teacher, all of whom can contribute to the understanding of the child's problem.

Having analyzed the child's linguistic abilities, it then remains to develop a therapy programme, most suited to the individual child's needs. A decision has to be made as to whether the child needs individual therapy, group therapy or the involvement in a specific language programme which will help to consolidate and expand his language abilities.

The Non-fluent child

In some children whose phonological development is within normal limits, whose linguistic and syntactic skills are developing normally, who is usually of normal intelligence and in all other ways is considered a normal child, there develops a problem with the degree of fluency with which he expresses himself. A loss of fluency is usually noticed when the child does one of five things.

(1) He begins to use phrase repetitions: "I saw it in the - in the - in the supermarket".

(2) He begins to use whole word repetitions: "He - he - he - he hit me".

(3) He begins to use syllable repetitions: "Mu-mu-mu-mummy".

(4) He begins to use sound repetitions: "I t-t-t-told him to stop it".

(5) He begins to use sound prolongations: "MMMMMMMMMMMy daddy said so".

From the very nature of these degrees of loss of fluency, it soon becomes apparent that the child is "stuttering". Unfortunately, the attachment of the label "stuttering" to the speech dysfluencies, soon makes the parents or teachers react negatively to the child's speech. This negative reaction then makes the parent more aware of how the child is producing speech, rather than on what it is that he is trying to communicate. From the figures available, there are indications that some 3-4% of the population have experienced some degree of stuttering at some time in their childhood, but that the children who go on to be confirmed stutterers form 1% of the adult population.

The speech pathologist is concerned with an analysis of the child's dysfluencies, and the environmental tensions and pressures which may be contributing to the child's loss of fluency. In the early stages, parent guidance and counselling may be all that is required, but if the disorder develops as a persistent manner of speaking, direct intervention strategies are necessary in order to help the child to reinstate and maintain fluency under all conditions.

Vocal Disorders

Disturbances of voice quality can occur in children who engage in excessive talking, shouting or screaming, to such an extent that the voice becomes hoarse and rough in quality. This may lead to changes within the larynx, such as reddening and inflammation of the vocal cords, or to the development of actual vocal nodules on the cords themselves. The contributing factors to a voice disorder range from medical conditions, such as upper respiratory tract infections to environmental and psychological disturbances whereby the child uses his vocal mechanisms as a means of gaining attention.

The speech pathologist needs to work in close liaison with the ENT specialists who give advice and information on the condition of the larynx, and the parents and teachers who can help control and modify the vocal behaviour of the child. Second to the abnormalities at the laryngeal level, are the disorders of resonance which may occur when there is an excessive degree of nasality. The child with a cleft palate for example will frequently have too much nasal resonance, or the child with adenoids will have too little nasal resonance because of the obstruction within the nasal cavities. These disturbances within the vocal tract, at the level of the larynx and the resonating cavities of the pharynx, oral cavity and nasal cavities may contribute to the individual having a deviation in voice quality.

A further group of voice disorders occur during the adolescent period when the voice quality is disturbed by an inappropriate use of pitch. Some post-adolescent males will use an inappropriately high pitch or falsetto voice quality. This frequently causes much embarrassment, especially on the telephone when the voice may be mistaken for that of a female. The principles of therapy with voice cases follows the lines of (1) eliminating or modifying excessive talking and vocal abuse,

(2) establishing a desirable use of appropriate pitch levels, (3) use of appropriate loudness and variations in volume control, and (4) controlling the rate of talking.

Personality and Emotional Disturbances

Some children have mastered all of the linguistic bases of speech and are fully capable of normal speech but for emotional reasons choose not to talk or communicate in the classroom or the school situation. Such children are not really speech defectives, since their speech is normal when they are willing to use it. It is not a normal reaction for a school age child to be unable to make friends with his teacher and other children. His abnormal fears of communicating usually stem from a deeper psychological reaction which prevents him developing interpersonal skills. Such children may have experienced a severe emotional shock, parents or some adult may have treated him harshly in the past, he may have been deprived of contacts with persons outside the family or the mother may have made him emotionally dependent on her. Others develop an active school phobia, and the refu[illegible]dgate is but a part of the wider problem. The term used [illegible]hildren is 'elective mutism' - however, I prefer the term 'selective mutism' since they are, under the appropriate conditions quite capable of normal speech. I have noticed that there are some children whose selective mutism stems from a primary language disability. They choose not to talk because of the primary language disability. These children frequently respond to a structured language programme, aimed at gaining their confidence in talking despite the limitations of their language disability. The others that I have encountered have been attributable to a specific traumatic incident, in the absence of the basic language problem. Such children are usually referred through psychiatric and child guidance units. Direct pressure on trying to force the child to talk will only result in further withdrawal. It is difficult to give specific suggestions for these children because of the great variability with these cases, however, the participation in group, non-speech activities, miming and puppetry, and expressive art work may help to improve communication skills in these areas.

Summary

Having outlined some of the major areas which are the concern of the speech pathologist, I will conclude with an overview of my own philosophy of what a speech pathologist should aim at achieving in his clinical approach to his profession.

1. Articulatory-resonatory behaviour needs to be assessed against the standards of intelligibility and developmental stages and norms for the ability to differentiate all the phonemic targets normally used within the community.

2. Linguistic structure needs to be analyzed according to the developmental stages of language acquisition and intervention

strategies implemented to ensure that the child is given adequate stimulation and encouragement to expand his language usage.

3. Phonatory behaviour can be assessed against the primary criterion of vocal hygiene, for the ability to produce voice of socially acceptable pitch, loudness and quality.

4. Speech flow - rate - rhythm - and fluency can be evaluated to ensure that fluency disturbances do not have a detrimental effect on communication.

5. Personality variables, and the personal-social interactions of the child can be evaluated to ensure that the child is not exposed to environmental conditions that may inhibit his growth and development.

Since all of these factors are interwoven in the processes generally referred to as "speech", they are dependent on growth, development and maturation, which in the normal child are usually firmly established by eight years of age. With appropriate diagnosis, assessment and evaluation it is our aim that all children who have a communication disorder at any level may have the benefit of appropriate therapeutic intervention at the time when he is most likely to show evidence of a developing disorder.

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WORKSHOPS

Identification and Screening of Young Children with Learning Difficulties.
Mr. R. Campbell.

Classroom Assessment of Young Children with Learning Difficulties.
Mr. A. Hayes & Ms. S. Ritter.

Prevention and Intervention with Culturally Different Children.
Mrs. D. Harwood and team.

Instructional Planning for Individualized Instruction.
Miss M. O'Donovan, Mr. K. Gilbert, Ms. M. Toohey, Ms. D. Best, Mrs. J. Nesbitt and Mr. R. Kelly

Assessment and Development of Language Skills.
Mrs. K. Abbs & team: Ms. P. Price & Ms. S. Bochner
Ms. M. Toohey & team: Ms. Liza Sommerville.

Reading Problems.
Mr. P. Mathams and team.

Motivating Young Children Towards Success in Learning.
Teachers from Isolated Children's Special Education Unit.

Behaviour Management in Different Settings.
Mr. I. Presland and Dr. E. Glynn.

Identification and Prevention of Learning Problems in Mathematics.
Dr. C. Irons and Ms. R. Reuille.

Helping Parents of Handicapped Children Develop their Intervention Skills.
Ms. R. Kirkley, Ms. W. Rees, Mr. R. Steandring, Ms. J. Morgan-Taylor

Policies and Procedure for Meeting the Needs of All Children with Learning Problems in the Schools.
Dr. H. McGrady.

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Communicating Across Disciplines.

Mr. B. O'Connor, Senior Lecturer in Education, Kelvin Grove College of Advanced Education.

Help for Children with Emotional and Behavioural Problems - When, Where and How?

Mr. G. Simpson, Coordinator, Education of the Intellectually Handicapped, Division of Special Education.

Realizing Home School Cooperation.

Mrs. A. Schmidt, Guidance Officer, Catholic Education Office.

The Exceptional Child in Open Area Classrooms.

Mrs. G. Halliwell, Department of Education.

The Needs of Parents of Handicapped Children for Information and Support.

Mr. N. Culbert, Coordinator, Education of Physically Handicapped Children, Division of Special Education

PROFESSIONAL DEVELOPMENT MINI-COURSES

Introduction to Exceptional Children

Mrs. K.J. Cochrane

Learning Characteristics of Young Children with Learning Difficulties.

Mr. J.A. Burge

Faulty Learning Behaviours in Young Children.

Mrs. E. De Lacey

APPENDIX

DESCRIPTION OF FOCUS AND CONTENT OF CONFERENCE WORKSHOPS

Identification and Screening of Young Children with Learning Difficulties (1 Day)
Mr. R. Campbell

The workshop will present an introduction to the identification of children in the regular classroom or preschool who are "at risk" of experiencing learning difficulties. Participants will compare screening checklists and will learn techniques for observing the behaviour of children in groups. Films and videotapes will be shown to demonstrate these approaches. Implications of recent studies of learning in neonates will also be considered.

Classroom Assessment of Young Children with Learning Difficulties (2 Days)
Mr. A. Hayes and Ms. S. Ritter

The workshop will give practical experience in the use of both formal and informal assessment techniques, with the link between assessment and intervention emphasised. Specific topics to be covered include the selection of appropriate assessment procedures, informal assessment techniques, observing in the classroom, interviewing and criterion-referenced assessment. Presentations will be in the form of short talks and films. Practical work will include using observational techniques such as the specimen record, time sampling and event sampling, constructing observational checklists, designing a structured interview and using task analysis to guide construction of a criterion-referenced assessment. Videotaped records of the classroom activity of a Grade 1 class will be used for the practical exercises.

Prevention and Intervention with Culturally Different Children (2 days)
Mrs. D. Harwood, Ms. D. Butler, Ms. D. Jones, Ms. J. Dwyer, Prof. B.H. Watts, Ms. A. Koudsta and Ms. S. Robertson

The focus of this workshop is two-fold: education of the culturally different child in the classroom and creation of a cultural awareness in all children.

Specific topics covered include:
Education in a multicultural society - the implications of the new departmental policy, establishing bias in teaching materials and creating a classroom environment to cater for individual differences.

Reading materials designed for Aboriginal children - reaction to materials being developed by students at N.B.C.A.E.

Creative writing and reading.

Assessment of the culturally different child.

Intervention at the school level - the role of the migrant teacher in the classroom, migrant child placement and settling in.

Cultural awareness - how to go about creating an awareness of the cultural diversity of children in our schools.

Instructional Planning for Individualized Instruction
(3 days)
Miss M. O'Donovan, Mr. K. Gilbert, Ms. M. Toohey, Ms. D. Best, Mrs. C. Aesbitt, Mr. R. Kelly

This workshop will cover organization for individuality in the classroom. The emphasis will be on the need to offer different instructional options for each child. The efficient use of teacher expertise in different organizational settings will be considered.

A videotape of organizational options in a Queensland classroom will be shown. Organization of materials within the classroom to facilitate individualized instruction will be discussed. Practical work will give suggestions in drawing up individual instructional plans, breaking down instructural tasks into simple sequential learning steps, matching the task to the child, writing objectives, evaluating and modifying instructional plans, and making materials for use with individualised instructional plans. The final session of the workshop will involve participants in making cassette recordings and other materials for use by children working through individualised instructional plans.

Assessment and Development of Language Skills
(3 days)
Mrs. K. Abbs, Ms. P. Price, Ms. S. Bochner, Ms. M. Toohey, I. Staples, K. Buxton, P. Dodd and Ms. L. Somerville

Facilitating oral language development is the theme of this workshop. Specific topics include: an overview of and characteristics of language acquisition; how parents view language development; developing listening skills and activities for improving auditory perceptual ability; assessment of oral language, including the use of the "Record of Oral Language (Clay et al.), along with training programs based on diagnostic information gained from the R.O.L.; assessing articulation; developmental language delay and remediation. Assessment and language development techniques for classroom teachers of children with language problems.

An overview of a program developed to assist parents to learn how to assess and train their young developmentally delayed child in early communication and language acquisition will be presented. The "Environmental Language Intervention Program" (MacDonald & Horstmeier), currently being undertaken with language delayed preschool children, will be described. Practice on detecting speech defects, administering an articulation test, and compiling a linguistic profile are included. Considerations to be taken into account by the teacher of the intellectually, sensorially or physically handicapped child will be discussed.

Early Reading Problems
(1 day)
Mr. P. Mathams and Ms. J. Gray

The workshop will present three techniques for the detection and remediation of early reading problems. The administration of "The Concepts about Print Test", *Sand*, by Marie Clay will be demonstrated and discussed, suggesting relevant activities to develop children's knowledge of the convention of the written language. Practice in using Running Record to monitor individual reading progress is included, as well as developing a lesson based on a child's responses on a Running Record. A general introduction to the Cloze procedures will be given, with the use of Cloze in classroom situations through various Cloze techniques, including oral Cloze, cover and predict Cloze, and zip Cloze.

Motivating Young Children Towards "Success in Learning"
(1 day)
Joan Lane, Michael Boyle, Greg Rogers, Kim Tvede, Rob Fitzwalter.

When selecting and designing curriculum resource materials suited to the needs of isolated children who are reluctant learners, teachers at the Isolated Children's Special Education Unit have had to ask themselves such basic questions as -

Why do children learn?
What stimulates learning?
What makes the acquisition of skill and knowledge a rewarding experience?

In these workshops they hope to strengthen their own understanding while sharing their experience with those attending.

Participants will discuss basic needs. They will examine Sara Lundsteen's five 'psychological allies' within children and look at the ways in which teachers and parents can stimulate motivation by what they are and what they do.

They will also look at ways of matching programs, materials, books, toys, etc. to needs. Criteria examined in this way may serve as a guideline to help teachers and parents to refine their judgements in selecting motivational materials.

Behaviour Management in Different Settings
(2 days)
Mr. I. Presland and Dr. E. Glynn

Participants will be introduced to the skills required to carry out a behaviour modification program.

Session 1 - General introduction to behaviour analysis/activity.
Session 2 - Workshop seminar on training parents or teachers in remedial tutoring procedures.
Session 3 - Training in data gathering techniques - school/class management programs.

Identification and Prevention of Learning Problems in Mathematics
(1 day)
Dr. C. Irons and Mr. G. Booker (correction from Ms. R. Reuille)

The workshop presents an overview of learning problems in mathematics encountered in early grades with particular focus on numeration problems. Also included are the teaching of early concepts required in mathematical operations. Experiences described represent actual casework at the Learning Assistance Centre.

Helping Parents of Handicapped Children Develop their Intervention Skills
(1 session)
Ms. R. Kirkley, Ms. W. Rees, Mr. R. Steandring, Ms. J. Morgan-Taylor.

The focus of the workshop is the development of intervention skills for parents of handicapped children. A videotape of the Infant Stimulation Program used by the Queensland Subnormal Welfare Association will be shown. This program has been designed for at risk children between the ages of birth and 5 years who came within the broad definition of intellectually handicapped. Emphasis is placed upon helping the parent to develop intervention techniques. Implementing the Portage Guide to Early Education, a home-based early intervention program for pre-school children, will be discussed. An overview of STEP, Systematic Training for Effective Parenting, will be presented. Parents who have completed the STEP course will present their practical applications learnt through such a course.

Policies and Procedures for Meeting the Needs of All Children with Learning Problems in the Schools
(1 day)
Dr. H. McGrady

This workshop is directed particularly towards educators and related professionals who are concerned with successful mainstreaming of handicapped children in regular schools.

In the U.S.A. Public Law 94-142 required schools to provide appropriate educational programs for all children subject to the constraint of a "least restrictive environment". Practical issues for meeting the requirements of PL 94-142 will be discussed. School administrators should find this workshop particularly helpful.